Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME 6.] NEW-YORK, APRIL 12, 1851. [NUMBER 30.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton, street, N. Y., (Sun Building,) and 13 Court street, Boston, Mass.

BY MUNN & COMPANY,

The Principal Office being at New York.
A. T. Hotchkiss, Boston.
Dexter & Bro., New York City.
Weld & Co., New Orleans.
Stokes & Bro., Philadelphia.
Cooke & LeCount, San Francisco, Cal.
Courtenay & Wienges, Charleston, S. C.
John Carruthers, Savannah, Ga.
Barlow, Payne & Parken, London.
M. M. Gardissal & Co. Paris.
Responsible Agents may also be found in all the principal cities and towns in the United States.

TERMS---$2 a-year---$1 in advance and the remainder in 6 months.

Rail-Road News.

The Erie Railroad.

The construction of this work will be completed by the 15th of this month. In anticipation of the opening of the road, the Directors of the Company have made arrangements to ticket passengers and check baggage through to Chicago, Detroit, Cleveland, Toledo and other places on the lake. On the arrival of the trains, the steamers Chicago, Queen City, or Keystone State, of the Detroit line; the Empire, Saratoga or Alabama, of the Cleveland or Toledo line, will be in readiness to convey passengers directly through to those places. The steamers Albany, Diamond, and Fashion will also form a line between Dunkirk and Cleveland, landing at the intermediate ports. These steamers are all first-class vessels, are fast sailers, and have superior accommodations. When these arrangements are completed, it is intended to convey passengers from this city to Dunkirk in sixteen hours, (night line eighteen hours;) to Detroit in thirty-six hours; to Cincinnati in forty hours, and to Chicago in forty eight to fifty hours.

The benefits which these arrangements will confer upon the travelling community cannot be estimated, and the Company are entitled to great credit for the enterprise they have exhibited.

The Irishmen on the Attica and Hornelsville Railroad, in western New York, struck for wages last week, and on Monday one or two men were killed by them.

From California.

The steamship Empire City arrived at this port on Tuesday, bringing one million in gold dust and 250 passengers. On the evening before, the Georgia arrived.

The construction of the Panama Railroad was progressing, and there was no sickness on the Isthmus.

Lynch law had been administered in Sacramento City upon a man named T. J. Roe, for murder.

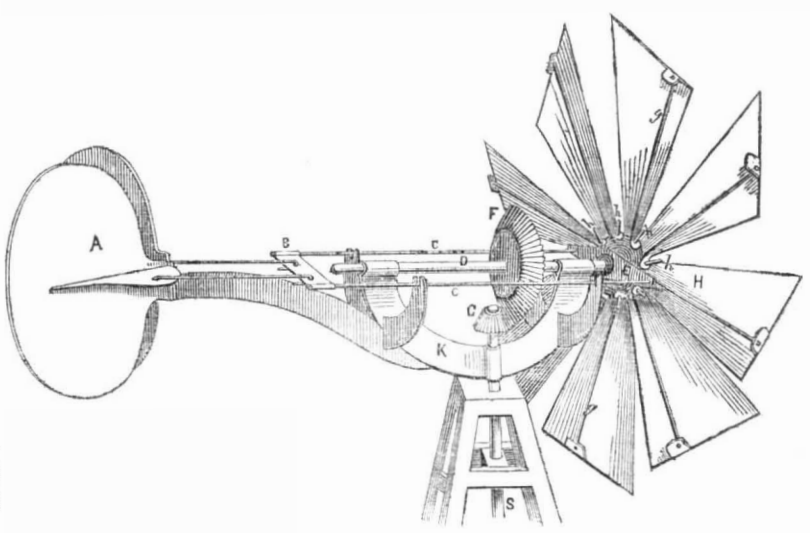
The quartz gold rocks are being worked with great success by machinery.

The gold diggers had been very successful, but it had been very cold on some parts of the mountains. The returns of gold from California, have not as a whole been equal to the amount sent out there in the shape of dry goods, provisions &c. Good returns will no doubt yet be forthcoming.

The State of California is one of the most extraordinary creations that we have any account of; in fact there has never happened such another movement, so far as we have been able to learn. More attention is now being directed to agriculture, but around San Francisco, the climate is not very healthy.

The great question now is, when shall we have a railroad to the Pacific.

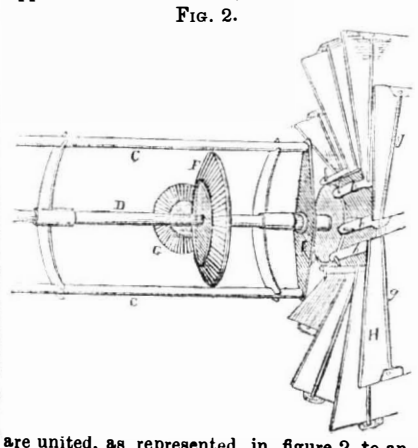
IMPROVEMENT IN WIND-MILLS.---Fig. 1.



This improvement in Wind-mills relates to a superior mode of governing the vanes according to the velocity of the wind. It is the invention of Mr. Marvin Smith, of New Haven, Conn., who has taken measures to secure a patent for the same. Figure 1 is a perspective view, and figure 2 is a plan view:—the same letters refer to like parts.

The wind-mill is represented as built upon a frame, with a vertical shaft, S, extending down; this frame may be erected in a tower or building in the inside of which is the machinery to be driven. The power is taken from the shaft, S, which may have a gear wheel on it below, or else a large pulley, and the power transmitted by belting. A is a double fan, which perform the office of a "governor." Each has a separate vertical axis, so that they can spread out or be moved close together; each one has a flange on its side from which a rod extends to a cross bar or plate, B; C C are two rods attached to this cross-bar. They are supported on curved arms, and extend to and

Fig. 2.



are united, as represented in figure 2, to another cross-bar, E. This latter cross-bar is secured on a collar which surrounds the driving spindle, D, of the wind-mill. The collar is close to the neck and has a disc or round plate behind the hub of the vanes or sails; H represents a vane or sail; each one is secured on a spindle, *g*, which spindle is placed on the back side, out of line with the centre of each vane, and with the inner end inserted in a central hub to turn in the same in a bearing (a bearing for each spindle). Between the hub and the disc of the collar behind it, there are springs of steel. Each vane, H, has a small curved flange, *h*, (with an opening through it for the spindle, *g*), which is united to the disc of the bar, E. Each curved flange has a perforation through its inner end, through which an axis on the disc passes, so that each vane is attached separately to the said disc, but all move simultaneously together. The shaft, D, is secured in the centre of the hub and revolves in bearing collars on the crescent arms, K, which can be turned round to any point of the compass as *it* is supported on the vertical shaft, S, by surrounding the said shaft with a collar. It is necessary that this should be easily done to present the vanes to the wind in any quarter. F is a bevel gear on the driving horizontal shaft, and G is a smaller gear on the vertical shaft; it will therefore be understood how motion is communicated to the shaft, S. The vanes of this wind-wheel are self-regulating.

The stiffer the breeze, each vane by its axis being out of line, turns its edge more and more to the gale, while at the same time, the whole of the vanes may be turned with their edges outwards by spreading the fans, A A, which thereby push the rods, C C, and their cross-bar E, close up to the hub. As the edges of the vanes are turned outwards, the said rods, by the curved flanges, *h h*, are pushed back and the fans closed. The springs between the hub and disc, and the flanges, *h h*, allow the shaft, D, to be moved so as to ungear the bevel wheel, F, from the other, G.

The motion of this wind-mill can be very easily controlled. All the machinery will be covered in. It can easily be rendered portable so as to be carried in a wagon from one place to another. It is adapted to all purposes for which power is required. The inventor designs to erect one on a truck, with wheels, so as to be moved at will: it can be used for driving grinding machinery and other kinds, and may be very useful for farmers, for sawing wood, pumping, &c. On the wide and extended prairies of the West, it appears to us, this wind-mill would be of immense benefit.

More information may be obtained by letter addressed to the inventor.

New Motive Power.

An engine has been completed in the American Machine Works, in Springfield, in which air takes the place of steam as the expansive force. It is to be sent to the World's Fair. It is said to work well, and shows that air can produce the same effect as steam, with one-twentieth part of the fuel, and less danger of explosion. A patent has been secured. If all this be true, the inventor must have found some new way of making available a force which has often been tried before with no success to be compared with steam power.—[Exchange.

[Let any one turn to volume three, page 134 and 142, and he will find that the above is nothing new as an application of hot air, but it is about the fuel. We do not believe a word about the economy of the fuel. We have never heard of the patent being secured either—never have noticed it in any of our lists of claims. More than one hot-air engine is described in Hebert's History of the Steam engine.

Keep Your Back Warm.

About 20 years ago, I read a medical treatise which stated "that the back is the most valuable part of the human system through which most of the colds enter."

Recollecting that when I took cold suddenly, I noticed that my back was generally cold, I had my waistcoat cushioned along the back, 6 or 8 inches wide, since which time I have not taken cold one quarter as often as before. Several who have tried the experiment at my suggestion, have informed me that in their opinion, they have been materially benefitted thereby.

The philosophy of it is; that by putting more clothing along the spine than elsewhere, other parts become chilly first, and warn to guard against taking cold, while the increased clothing at the same time prevents such a sudden change of temperature. Take care—coming from the back is generally too late, the cold have already become seated.

I hold that cold and damp feet cause many colds. because they induce to chill the back, more than because they cool the extremities.

None of all the lower animals the Lord has clothed has less clothing on the back than upon other parts of the body. To me it looks frightful to see so many delicate persons go with their backs and feet half clothed. But while hosts are cracking up for agricultural societies and bureaus to improve the breed of our domestic animals, the favored of the people are worshipping the great moloch of fashions and sacrificing upon his shrine multitudes of the choicest portions of our race.

C. Rich.

Cold Water for Burns.

Fowlers & Wells recommend the application of cold water as a cure for slight burns. This I tried with the following success. My little girl, 2 years old, fell from a dining chair upon the top of a cooking stove heated almost to redness with coal. One half of her face was burned to a blister, and one arm the same. Cold water was immediately applied with linen cloths, the child ceased crying, and soon fell asleep and apparently suffered no great inconvenience from it afterwards. This was more than a year ago, and there is not even a scar left to tell where the burn was.

G. L. F. Bailey.

Two Chinese merchants, Ahung and Ry have arrived at Berlin on their way to England, to visit the exhibition. They have preferred the overland journey, through Russia, to the sea voyage which some of their associates are making in a junk.

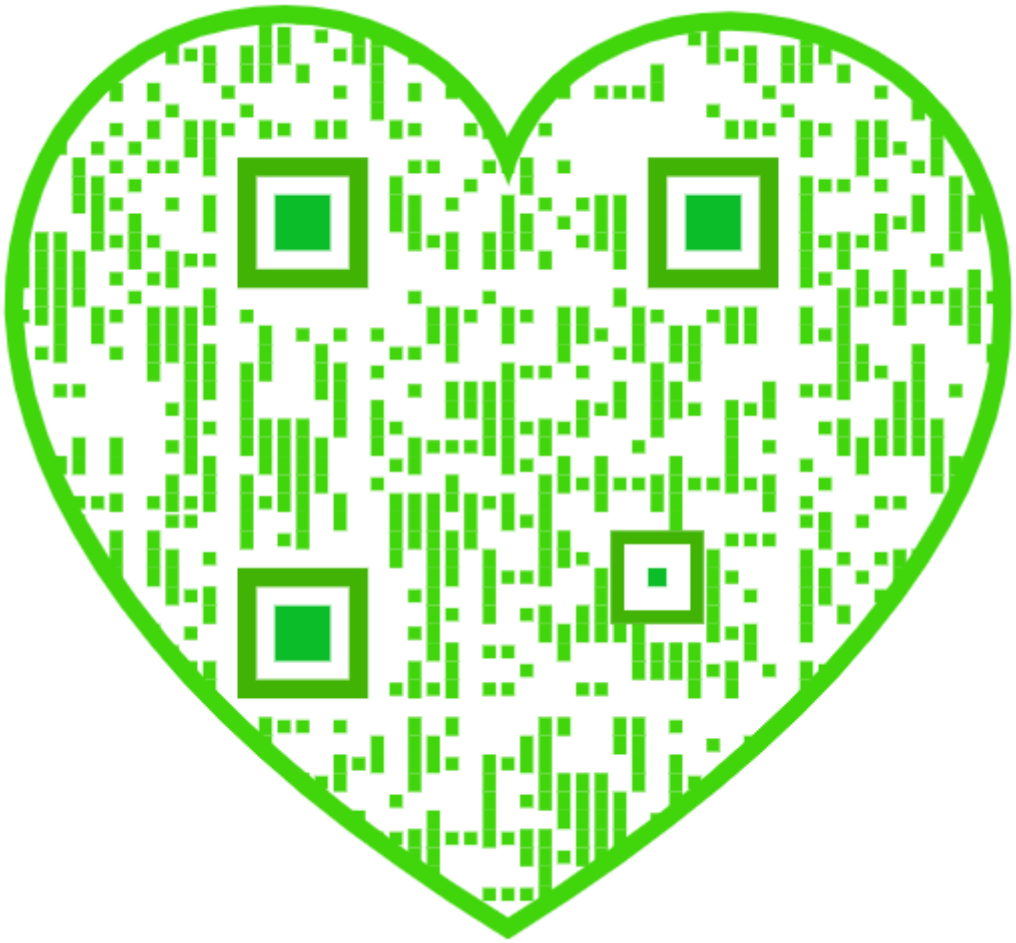
Cincinnatti for Pork Hams.

The Gazette states that nine men of that city recently canvassed 3,408 hams in nine hours. We think this a decidedly preferable and more honorable business than canvassing for voters. The canvassing is nothing more than covering the hams with cloth.

A ship Wm. Rathbone, left Savannah on the 1st inst., with the immense cargo of 2,897 bales of upland and 445 bales of sea island cotton.

Mr. Mitchell, an Edinburgh, Scotland, engraver, intends sending to the exhibition a piece of gold so small that an ordinary pin's head will cover it; yet it contains the whole of the Lord's prayer.

© 1851 SCIENTIFIC AMERICAN, INC.



Miscellaneous.

Foreign Correspondence.

LONDON, 21st March, 1851.

Our noble frigate the St. Lawrence, arrived at Southampton on the 13th of last month, —she brought more articles for the World's Fair than was anticipated. The people of Southampton hailed her arrival with great rejoicings, and the Mayor and Magistrates received our officers (as they should) like princes. I will note some of the American articles at more length after they are on exhibition.

The building is not quite finished, but goods are unpacking and organizing at a red-hot speed. It is intended to have it open on the 6th of May, at farthest; I hope it may be all ready by that time, and from the regularity and speed with which the work has already been done, I see no good reason to doubt the complete finish of it at the time specified.

The large hydraulic press (500 tons weight) employed to raise the Britannia Tubular Bridge, has arrived, and to foreigners it will be a subject of wonder.

There have been some bickerings between the Commissioners and the French Commissioners, about the room necessary for the articles sent from that country to be exhibited. The space assigned to France is exceedingly ample, embracing in the whole about a hundred thousand square feet, and constituting little less than a tenth of the whole exhibition space of the building. Out of this one hundred thousand feet, it was most distinctly intimated by the executive committee, during their correspondence with the French commission, that 50,000 feet should be deducted for walks and passages. It would seem, however, that the French local committees dealt with their contributors as if the whole 100,000 feet were available for the display of their productions. Notice was given to persons who had obtained gold medals in their own expositions, that an unlimited quantity of goods would be received from them, and silver medallists were led to believe that their treatment would be little less liberal. The natural consequences of these inconsiderate proceedings was an influx of contributions, for the accommodation of which the very ample space accorded was totally inadequate. Upon the discovery of this unpalatable fact, various devices were put in requisition by the French authorities, to procure either an extension of their spaces, or a curtailment of the extent of the passages by which they are traversed. The executive committee, however, were inexorable. They pointed to the fact that the original number of British contributors was 9,000, who, by the exercise of judicious weeding and selection by our local committees, have been reduced to 6,000; and they called on the French commissioners to exercise a similar system of vigorous compression, and to reject everything not stamped with indisputable excellence of some kind.

A new adaptation of lithography to the process of printing in oil has lately been invented by Mr. Kronheim, of Paternoster Row, which is thus described in the Times:—"He uses six different kinds of blue, two of red, six of yellow, three of brown, five of gray, and a variety of flesh tints. Outlines are made not only of the forms but of the shading of colors in the painting which he wishes to copy. Proofs are taken from these outlines and transferred to a number of stones, corresponding to the number of colors, as just specified, which the painting contains. In this way lithographed outlines of the several parts of the painting, according to the distribution of its coloring, are obtained. Each description of red, blue, yellow, or whatever the tint may be has its stone, and the outline engraved on each stone is more or less filled in (according to the amount of shading required) with a species of chemical ink. Aquafortis is then applied to produce a raised suface, after which the oil colors are made to pass over the stone by rollers, where they are at once arrested by the ink. So delicately contrived is this part of the process, that according as the chemical ink has been more or less closely wrought in, the utmost nicety of shading can be secured. The colors from the stones are then printed off upon paper, and the exact tints required are produced by printing one color over the other, upon the same principle as that which guides the artist in mixing his paints. In this way, when all the impressions of the different stones have been put together, they form themselves into an exact copy of the original picture; a copy true not only in the details of outline, form, and shading as is the case in steel engravings; but true also in respect of that great art of coloring skill which forms so large a part of the painter's art. We saw at Mr. Kronheim's a number of copies (produced by his process) of the "Descent from the Cross," by Rubens, in the cathedral at Antwerp. They represented with astonishing fidelity the brilliant and varied flesh tints in which that great master luxuriated, and except that they were executed on paper, and not canvass, they had the appearance of genuine copies in oil. So far is this carried that each copy may without injury be washed with soap and water.

So far as the manipulations of the art are concerned, the process is about the same as I have seen practiced in America, but the pictures are certainly superior. This is an art in which we are far excelled by European artists. I think our American Daguerreotypists are superior to all others, and will no doubt compete well with other exhibitors.

The report of a most dreadful colliery explosion in Scotland, has just reached this city. It took place at the Nitshill, about five miles from the City of Glasgow. The pit was 175 fathoms deep (1,050 feet—what a depth for men to work), and was named the Victoria The explosion was caused by fire damp. There were 63 persons at work in it at the time; only two have yet been received alive. So destructive was the explosion that the machinery at the top of the pit was shattered to atoms, and houses for five miles around shook with its force, as if an earthquake's voice had thundered from below.

The place where this accident occurred is celebrated for the manufacture of alum—the ore for that purpose being found in the pits. The accident is supposed to have occurred from some of the walls falling and obstructing the ventilation, which was good. No explosion of a steamboat on the western waters of America, was so dreadful as this one. The coal mines of Pennsylvania are of no depth at all in comparison with some of those in England and Scotland. In the coal basins of Britain there are generally four or five seams of coal, separated by other strata, and from the first to the lowest, the distance is often some hundred feet. The upper seams are soft and bituminous; the lowest seam is the hardest and best, burning clean and beautiful. Limestone, iron ore, and coal seams are found interlayed in the British Coal Basins, and this affords the iron manufactures of England every advantage. EXCELSIOR.

The Mystery of the Electric Circuit.

MESSRS. EDITORS—In describing the American Electro-Magnetic Telegraph, on page 211, you assert that "the fact is beyond all question—the ground forms part of the circuit." Although I do not profess to be much versed in such matters, I affirm that it is not a fact, unless in a most far-fetched and strained meaning. I hope some knowing-one will give us a peep into this—as I call it—great fabulous millstone.

I here venture my opinion:—the earth operates as an absorbent of the electricity, and not as the connecting circuit conveying the same electricity to the negative end of the battery. The large surface which the sheet of copper presents to the moist earth, enables the earth instantly to extract the electricity. Who believes the same electric fluid passes directly from New York to Philadelphia, using the earth for its conductor?

I imagine that if a large quantity of moist earth were insulated by being put into a vessel made of a non-conducting material, and a sheet of copper, connected with a battery-wire, were placed in this earth, a current of electricity could be discharged into this vessel, for a brief period; but as soon as this earth should become highly charged the current would cease.

As well may we say that the same drop of water put in at one side of a large pond can be made to pass to the other side, is evaporated in the open air, and returned directly back recondensed, as that "the earth performs the circuit" one half mile, to a one-wire telegraph. The earth merely absorbs the electricity.

CLARK RICH.

Shoreham, Vt.

[It will be very easy for friend Rich to prove his own theory. Let him get two large tubs filled with water, and place them at a considerable distance from one another, on a dry carpet. Then let him put the wire of one pole of the battery into one tub, and the other wire into the opposite tub. If his theory be correct, he will receive a shock if he puts his hand into either one of the tubs. Now, friend Rich, look out for your own theory proving a "fabulous millstone."

To us it has always appeared irrational to suppose the earth formed part of the circuit, and that the fluid, in an instant, fleeted through the earth from one distant place to another. To explain the idea to those who have not fully investigated this matter, let us say, that a galvanic battery will not exhibit any electric force, unless its two poles be joined together by what is termed an "electric circuit." An electric circuit may be formed of the metals, and the moist earth but not with glass or resin. An electric circuit means the connection of the two poles of the battery by a road for the electric fluid, such as a metal wire, and unless such a road is found, no electricity will be developed. The telegraphs use only one wire, and by connecting the wire of one pole of a battery at Baltimore, with a metal plate, inserting that plate in the ground and doing the same with the wire at the other pole of the battery, at New York, an electric circuit is formed and electricity is developed. The subject is mysterious, but electricians only use the language we have used, as quoted by Mr. Rich, until a better theory, based upon incontrovertible facts, is put forth, and we say it is the best we can use to explain the workings of the Electric Telegraph.

Friend Rich says he has no doubt but a tub of earth would attract electricity until it was highly charged, when the current would cease. He should be able to tell them how a copper wire, connected with a battery, after becoming highly charged, does not stop the current—but right on it goes. The philosophic explanation given of the electric circuit, is that "no electricity leaves the battery until a road is formed for the fluid to travel freely from one pole to the other."

Magnetism of the Atmosphere.

MESSRS EDITORS—I have learned since the publication of my letter on page 144 of your journal, that Mr. Faraday's discovery of the magnetic properties of oxygen was made or communicated three years ago; this fact, however, does not affect my priority claim, my experiments and communications being made in January, 1845.

I believe, with Lieut. Maury, that the discovery is the "key-stone for some of the most grand among the sublime and beautiful structures which philosophy is erecting for monuments to the genius of the age," and it is this importance—this scientific value, that determines me to at least make the attempt to establish a just claim as its author. The discovery has a very important bearing on the successful action of my experiment in the tranformation of water into the gaseous state, and without the knowledge that oxygen was magnetic, I could not have taken a single step in the prosecution of my experiments. I would here remark, that if the scientific bodies who have seen fit to make my experiments the subject of their merriment and ridicule, were as well posted on the subject of atmospheric phenomena, as they are dogmatic in old school philosophy, a great display of ink, pomposity, and ignorance, would have been saved.

The following experiment may be interesting to Lieut. Maury and your readers who are interested in such matters:—About the middle of June, 1849, my apparatus was located over the rocky top of a hill; towards the last of the month I noticed a diminution of effect, and was obliged to add extra weight to the apparatus. At my house, situated about a quarter of a mile in a due east direction from the hill, another apparatus, and precisely the same in its construction with the one on the hill, was observed to *increase* in effect, and the weight had to be lessened in order to secure safe action. This difference in the working of the two machines led me to suspect that electrical currents were passing in vertical strata. In order to test this supposition, the hill apparatus was carried a distance of half a mile in a direct line E. S. E. from the hill, and worked at every few rods on the line. The result was, that the same velocity of the helices gave continuously changing results—at some stations hardly producing any result, and at others a great excess over the required action. The wind, a light summer breeze, was in from the S. W., during the experiments.

During the prevelance of cholera, in Paris, an eminent chemist there stated, that in those districts where the epidemic was the most fatal, he invariably found atmospheric electricity to be very feeble. During the same season a chemist, in Edinburgh, made some experiments, and found the electricity to be in excess: the consequence was, that the two chemists came to very different conclusions with the same course of experiments—the first attributing the mortality to the want of electricity, and the latter to its excess. Now the experiments I made, as mentioned above, prove conclusively that both of them, as well as many others, were in error in attributing the epidemic to electrical action.

I perceive that a writer has commenced an article on illuminating gas, in your last, and after indulging himself in a fling at what he calls "False Lights," he proceeds to *assume* that carbon is necessary in certain atomic quantities for the production of luminiferous flame. I know the object which prompts the writer, at *this present time*, to pen his article, and I assure him that he will not succeed. I deny that the combination of one atom of carbon and two atoms of hydrogen is the requisite combination for the production of good light, and I propose to prove, in your next number, that this proposition, the base of his whole article, is an assumed one, and entirely wrong. Yours, HENRY M. PAINE.

[So far as relates to the discovery of oxygen being magnetic, we have no evidence to disprove what we have said about Faraday being the original discoverer. Will Mr. Paine refer us to any printed publication respecting his discovery being made in 1845? We always wish to do justice to every man—"honor to whom honor is due." Faraday's discovery was published as early as 1847, in the Philosophical Magazine.

Bahama Sponges.

The rapid strides made in sponging within the Bahamas, since the year 1847, appear almost incredible. Vast quantities of sponge may be seen covering fences, yards, and housetops, where it is left to dry, after having been previously buried (in order to kill the zoophyte which inhabits it) and washed. It is afterwards divested of the fragments of rocks which adhere to it, pressed and packed in bales, averaging 300 lbs. weight, each, for the London market, where it is manufactured into cloth hats, &c., and converted to many useful purposes. We are informed that it has recently become the medium for poultices to wounds instead of cloth. "From the 1st January to June 30th, of the year 1849, there were exported nearly 1,000 bales of sponge, of the value of at least 25 dollars each—$25,000. On the 1st of January, a very small stock of sponge was on hand, while on the 30th June every dealer in this article had a large stock; therefore, as it is a cash article, there must have been paid to the crews employed in this trade at least 40,000 dollars.

The Mediteranean at one time furnished all the sponges used in Europe, and the very finest are yet fished up around the Isles of Greece. Our finest sponges sell at a very high price. Could not sponge-fishing be carried on along the coast of Florida?

© 1851 SCIENTIFIC AMERICAN, INC.

Nasmyth's Improvements in Forging Heavy Masses of Iron.

The following paper was read before the last meeting of the British Association for the Advancement of Science, at Edinburgh by Mr. James Nasmyth, the inventor of the steam hammer. It is a subject of great interest and importance to many of our readers :—

Mr. Nasmyth instanced several cases in which paddle-shafts of marine engines had given way, although, in the first instance, they had all the outward aspect of the most perfect soundness, but which, on fracture, exhibited the existence of original defect, in being little else, internally, than a mass or bundle of loose bars of iron, which had never been in a sound welded union, but had only been held together by the exterior, where alone the welding had been so far perfect.

The chief cause of such defects was traced to the action induced on the centre part of the metal of such shafts, by the action of hammering such cylindrical forms between two flat surfaces, as is the case of the forge hammer and anvil of the ordinary construction.

Mr. Nasmyth exhibited a diagram, of which fig. 1 is a copy, in order to illustrate the action induced on the centre portion of a cylindrical forging, when produced under the action of a flat faced hammer and anvil.

It will be seen at once that the action induced on the centre portion of the metal of a shaft or such like cylindrical form, by the successive blows of a flat-faced hammer and anvil, as A and B, is to cause the work to spread out or extend in the direction of E D, E C (as represented by the double pointed arrow in the figure), and as the flattened out form has to be attempted to be corrected by turning the shaft round and round on the anvil, so that each successive blow may be made to correct the spreading out caused by the previous blow, the result of this action is a fretting or mincing of the centre part of the metal of the shaft, resulting in the separation of the metal throughout the entire centre portion of the shaft, somewhat after the manner indicated in fig. 2, frequently to such an extent as to permit the passage of air or water from end to end of shafts forged in this manner. The effect of this kind of unsoundness is, that it is certain, sooner or later, to work out towards the exterior, and in all probability, result in a "break down" more or less disastrous in its consequences.

Mr. Nasmyth then proceeded to describe his improved form of anvil face, by the employment of which all such defects as detailed above are avoided. Such has been the perfect success and excellent results which have attended the use of his improved anvil face, that its adoption has become universal, and the production of absolutely sound, solid wrought iron shafts, of whatever magnitude, rendered equally easy as certain.

A, fig. 3, represents the form of Mr. Nasmyth's improved anvil face, which he terms a V anvil, between the jaws of which the work to be hammered is placed, as indicated by a cylindrical shaft seen in section marked C, C, C. A glance at fig. 3 will, no doubt, render its action evident—viz., that the effect of each blow of the hammer on the work, C, C, C, instead of causing as in the case of fig. 1, a diverging action on the centre portion of the work, occasions, on the contrary, a converging action, as represented by the three arrows, and instead of having the centre portion of the metal of the shaft rendered less compact and solid by the action of the blows of the hammer, we have quite the contrary effect produced; besides which, owing to the wedge-like form and action of this V anvil face, the compressing effect of the blow is most importantly enhanced, and the ease and rapidity with which such cylindrical work as shafts and the like can be produced by such means, is most remarkable, so much as to enable the forgeman to hammer out at one heat, by means of this V anvil, as much as would require three heats on the common flat-faced anvil; add to which the vast convenience which the fork-like form of the V anvil yields, in keeping the work at all times right under the centre of the hammer, as it turned round and round to receive the successive blows, which, in case of work of the largest class, is a matter of no small trouble. Another advantage consists in the free passage, or exit, which is at all times preserved for the escape of the scales and impurities which fall from the hot iron during the process of hammering, which scales fall down towards the apex of the V at D, and trickle away—thus removing the cause of blemish and roughness which is occasioned by such scales collecting on the face of the flat anvil, and getting beat into the surface of the forging.

It will be seen, on inspecting fig. 3, that one such V anvil face as there represented will accommodate a vast range of diameter of work, namely, all diameters such as will neither absolutely rest on the bottom of the apex, D, or on the corners, F F.

Fig. 1.

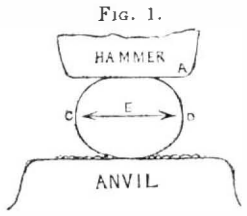
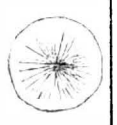


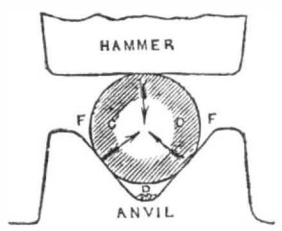
Fig. 2.



Mr. Nasmyth has taken every means by the most free communication to promulgate among those interested the advantages of this V anvil, and has been rewarded by seeing its use become almost universal. Mr. Nasmyth stated that an angle of 80° was found by him to be most generally suitable for the inclination of the sides of the V, and also that the edges should be well rounded off, and the surface of the V sides curved in the direction of the axis of the work to the extent of ⅛th of an inch in 12 inches, so as to be "prowd" in the centre, and facilitate the extennion (axis ways) of the work. The great simplicity, as well as the important results which are yielded by the employment of this V anvil face, has in no small degree, contributed to its almost universal adoption. Its employment renders the production of perfect sound work easy and certain.

Mr. Nasmyth next proceeded to describe the second part of his improvements in forging iron, which consists, as in the first case, of means equally certain and simple in producing sound boiler-plates. Mr. Nasmyth prefaced the description of his improvements on this truly important subject by detailing the nature of the most frequent cause of unsoundness of iron forgings generally, and in boiler-plates in particular—namely: the imperfect expulsion of the molten oxide of iron "scoria," or "cinder," as it is termed, which, in every case of welding hot iron covers and clings to the surface of the metal; and, if left interposing between the welded surfaces, is certain to occasion a defect greater or less, according to the

Fig. 3.



surface of junction it occupies. The frequency of this interposing scoria as the true cause of unsound forged work, was forcibly alluded to by Mr. Nasmyth, and shown to be the most fertile source and cause of the failure of wrought iron work, resulting as such too frequently does in the most sad and disastrous accidents—such as the failure of the links of chains and anchors, and in the costly and often distressing results arising from defective (*i. e*, blistered) boiler-plates.

It respect to the links of chains, Mr. Nasmyth mentioned as the result of an extensive series of experiments on the strength of chain cables, on which, as member of the "committee on metals," he was employed by the Admiralty, out of every 10 cases of fracture, eight were occasioned by defective welding, as evinced by the appearance of the surfaces, which present to a practical eye appearances not to be mistaken, owing to the very peculiar aspect of the surfaces of the apparently welded metal, between which surfaces the oxide or scoria had not been duly expressed.

Mr. Nasmyth further described the condition absolutely requisite to perfect welding—namely: not merely that the surfaces we desire to weld should be really "welding hot," but also that, when brought into contact, no particle of the scoria, which inevitably clings to the metal while welding hot, should be permitted to remain interposing between such surfaces. If such material is left interposing, we are certain to have defect and unsoundness, to a greater or less extent, as the result.

In order the more clearly to detail his improvements on this important subject, Mr. Nasmyth exhibited a colored drawing, representing the usual form and arrangement of a "pile" of "slabs," such as are employed when welded together, to form a mass of iron, from which boiler-plates, or bars of iron, are rolled. Fig. 4 represents such a "pile" of "slabs" which, having been, as is generally the case, produced under the action of a forge hammer and anvil, having flat or, as is generally the case, slightly concave surfaces, causes the slabs so produced to have certain hollow parts, or slightly concave portions of their surfaces, so that, when piled one upon the other, as in fig. 4, the risk of having hollow spaces is almost certain. The hollow spaces are represented in the figure by the dark irregular lines between the slabs.

Referring to fig. 4, A B C D, represent a pile of four slabs, laid on the anvil welding hot. Owing to the concave irregularities of the surfaces; the parts most certain to come into contact first are generally the exterior edges of the slabs. The effect of the blows of the hammer first weld the parts in natural contact, and by continuance of the blows the interposing scoria, or cinder, is expressed in a degree more or less perfectly, according to the energy of the blows, and the deepness of the concave, or hollow patches, betwixt the slabs.

Fig. 4.

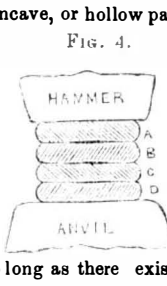
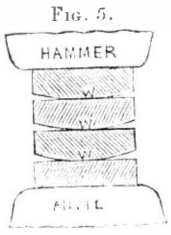


Fig. 5.



So long as there exists an exit or passage, for the scoria all is well; but, as generally happens, some portion of the scoria lurks behind, after all chance of escape is removed by the welding of the exterior portion of the surfaces of the slabs. The result of this is that we have, to a certainty, a defect, greater or less in amount, according to the quantity, or surface, over which the enclosed scoria extends. Once such scoria is shut up between the surfaces of the slabs no amount of after hammering will ever expel it, but, on the contrary, will only tend to its extension over a larger surface; and, as before said, so long as a particle of this scoria is left interposing, so have we a degree of unsoundness in proportion.

Great as this evil is, and common as it is, as a fertile cause of defective iron-work, and the more especially so in the case of boiler-plates, the means of avoiding such source and cause of defect is as simple as the results are important; and it is to be hoped that the free and open communication which Mr. Nasmyth has made of his views on this subject will be answered in the most acceptable way by the general adoption of his improvement, as a certain means of avioding the occurrence and existence of all such causes of defective boiler-plates and forge work generally, which improvement consists simply in so forming the surfaces which we desire to weld together that a free exit may be preserved to the last for the escape of the molten oxide, or scoria, until the entire surfaces of the parts we desire to weld are thoroughly incorporated by the welding property under the action of the hammer, or rolls, as the case may be.

In order to accomplish this most important and desirable object, Mr. Nasmyth forms the surfaces of his slabs convex (see fig. 5), by which simple means a most perfect free exit to the scoria or interposing impurity is maintained to the last moment, the welding commencing at the centre part of the contact, W, and extending outwards towards the edges under the action of the successive blows of the hammer, or squeeze of the rolls; but, as before said, an open door is kept for the escape of the scoria, until the surfaces unite from the centre, W, to the outside edge Here, then, by an arrangement or formation of the surfaces we desire to weld, we have the most certain and simple means of procuring a perfectly solid sound mass of iron, which, when beaten, hammered, or rolled down to whatever thickness we desire, will retain to the last all the qualities of the one sound solid mass we had converted it into by this most simple improvement—viz., giving to the surfaces we desire to weld a convex form, and relation to each other.

Mr. Nasmyth concluded his observations on these important subjects by an earnest appeal to the members of the mechanical section to diffuse, by all means in their power, the information which, on this as on all such subjects, he will ever feel the highest pleasure in communicating to the practical men of his profession, who may think fit to accept these results of an active life, which he finds so much pleasure in freely sharing with them.

Passages of the Atlantic Mail Steamships from Liverpool to New York, from Jan. 1 to April 3, 1851.

The Franklin, (Am.), from Cowes, England, arrived at New York on Thursday, Jan. 16, at 9 P. M., after a passage of 14 days and 6 hours. [This passage is noted as a good one, because out of the regular list.]

The Asia (Br.) arrived on Friday, Jan. 17, at 9 P. M., after a passage of 13 days 9 hours from Liverpool.

The Arctic (Am.) arrived at New York on Monday, 27th Jan., at 8 P. M.: left Liverpool at M. on the 11th—passage 16 days 8 hours. Ran short of coal and had to put into Halifax on Friday, 24th.

The Africa (Br.) arrived at New York, on Saturday evening, 8 o'clock, Feb. 1,—passage 14 days and 9 hours. This vessel brought word of the safety of the Atlantic. The Atlantic left Liverpool Dec. 28, 1850. She broke her shaft when about half way across, and after battling some time with the tempest, put back. She arrived at Cork on the 22nd Jan. The captain of the Africa, before his vessel touched the dock, spoke through his trumpet, announcing the safety of the Atlantic. The news flew through the city like a shock of electricity, as it was supposed she had been lost.

The Baltic (Am.) arrived at New York on Thursday, at 1½ P. M., 20th Feb.,—passage 12 days. Left Liverpool Feb. 8, at 1 P. M.

The Pacific (American) arrived at New York on Thursday, March 6, at 5 P. M.,—passage 12 days 2 hours. She left Liverpool on Saturday, Feb. 22, at 1 P. M.

The Asia (Br.) arrived at New York on Friday, March 14, at 8 A. M.,—passage 12 days 20 hours.

[The Franklin, from Cowes, arrived at New York on Saturday, March 22, making another passage of 14 days.]

The Arctic (Am.) arrived at New York on Sunday, March 23, at 8 A. M.,—passage 14 days 18 hours. She left Liverpool on the 8th.

The Baltic (Am.) arrived at New York on Thursday, April 3, at 8 P. M.,—passage 12 days 8 hours.

The Cunard and Collins Steamers.

From a statement compiled for the London Times from a parliamentary document, it appears that the Cunard company receive from the British Government £145,000 per annum, or equal to £3,300 per voyage, while the Collins line receives from the American Government $383,000 per annum, equal to $4,000 per voyage—the Collins' company undertaking to make twenty voyages out and home in the year, and the Cunard company forty-four voyages. The former, therefore, get double the pay of the latter.

[The above we have seen in a great number of papers. The amount for each Collins' vessel by the above account, for 20 voyages, is $19,150; but is the Times correct. Who gave the information that only 20 voyages were to be performed yearly for $383,000? This would be a fat job indeed, and would pay well. How foolish to get 5 steamships built when two could make money by such a bonus.

© 1851 SCIENTIFIC AMERICAN, INC.

New Inventions.

Norcross's Planing Machine.

We had the pleasure, a short time ago, of examing a beautiful working model of the Planing Machine of N. G. Norcross, of Lowell Mass., which was patented 12th February, 1850. The machine was in the office of Messrs. Stoughton & Harrington, Attorneys, Wall street, this city. We intended to say a few words about it, before this, but owing to so many things coming before us, it escaped our memory, until a friend inquired of us two days ago, if we had ever seen the machine. The cutters of this machine are on a rotary cylinder, but pressure rollers, like the Woodworth machine, are not used. The board is fed in and works along on a table or bench, and the planing cylinder acts upon the board with a rest bar directly above. The planing cylinder and this rest bar may be said to be flexible, as they move vertically together in proper bearings to accommodate their action in unison to the thickness of the board to be planed. The work produced by it is excellent. Owing to the way in which the bed and rest bar are made, the boards are presented to the action of the cutters in a slightly concave surface, this condenses the fibres of the wood and presents a firmer face to the cutters. Knots, and splints, therefore, are not so liable to be thrown out by the cutters, as in other rotary machines.

Double Rotary Grinding Metallic Mill.

Mr. C. W. Van Vliet, of Milton, Ulster Co., N. Y., has invented and taken measures to secure a patent for an improvement on rotary grinding mills, which is well worthy of general attention, because such a mill can be made at but little expense, and it is not liable to get out of order. The mill is double, and has a revolving circular grinder in each case, something it may be said like a large cog wheel and pinion running in two cases, with an opening from the one into the other. The periphery surface of the grinder, which is shaped like a circular stone is serrated, and there is a serrated face with conveying channels on the inside of the case. This is the same in each. The large case is the one where the grain is fed in, and it answers the purpose of a *cracker*. There is a channel into the small case through which the cracked grain is driven and then submitted to the more rapid motion of the small grinding wheel. These grinding wheels can be driven by band and pulley. For farmers, such a mill would be very useful and economical. Messrs. Haviland & Elmer, of Milton, are the assignees.

New Smut Machine.

Mr. Alfred Joplin, of Chesterfield, S. C., has invented and made application for an improvement in machines for cleaning all kinds of grain, which promises to be valuable, as being simple of construction, effective in action, and not easily deranged. There is a conical fluted roller with two or three broad channels extending its whole length, and this roller works in the inside of a perforated metal case. The grain is fed in through this case, and finds its way to the end of the roller, being acted on by the fluted projections spoken of in its passage. This action separates all the smut and impurities from the good grain, and at the channel out of which the scoured grain is passing, it is met by a current of wind which blows away all the impurities of a less specific gravity than the good grain, while the good grain falls down through the current into a proper receiver.

Improved Printing Press.

Mr. Lucius P. Guernsey, of Montpelier, Vt., foreman of the "Christain Messenger," has made some improvements on printing presses and has one on his plan in operation, respecting which he says :—"I am satisfied that a press large enough to work any country paper, would be easily driven at two or three tokens per hour, and with far less motive power than is required by Adam's improved press. And I am further satisfied that, as a regular business, they can be made in a thorough substantial manner, and sold at five hundred dollars—complete in blanketing, roller moulds, &c."

IMPROVED SEED DRILL.

The accompanying engravings, represent improvements on a seed drill, by Messrs. Lyman, Bickford, and Henry Huffman, of Macedon, Wayne Co., N. Y., who, as we stated three weeks ago, had taken measures to secure a patent for the same. Fig. 1 is a perspective view. Fig. 2 is a plan of the distributing seed cylinder, and slides detached. A is the hopper for receiving the seed. B is a gear wheel on the end of the distributing seed cylinder, which is made to revolve on fixed bearings; C is another gear wheel on the outside axle of the carriage; D is a small intermediate wheel secured on a swingle lever, E, to gear the wheel, B, with the axles, so as to give motion to the seed cylinder, or throw it out of motion by working the lever, E. F is a shaft extending across the frame behind, and is worked by the lever extending up behind the hopper; I I I are seed tubes or spouts. They extend from the underside of the revolving seed cylinder to the ground. Each one is secured to a metal band around the shaft, F, being connected by a chain to an arm on the band. There is a small handle to each band also, by the turning of which a single spout can be raised as desired. By turning the large handle of the shaft, F, downwards, all the spouts will be lifted at once above the the ground. The spouts (each one) are made

Figure 1.

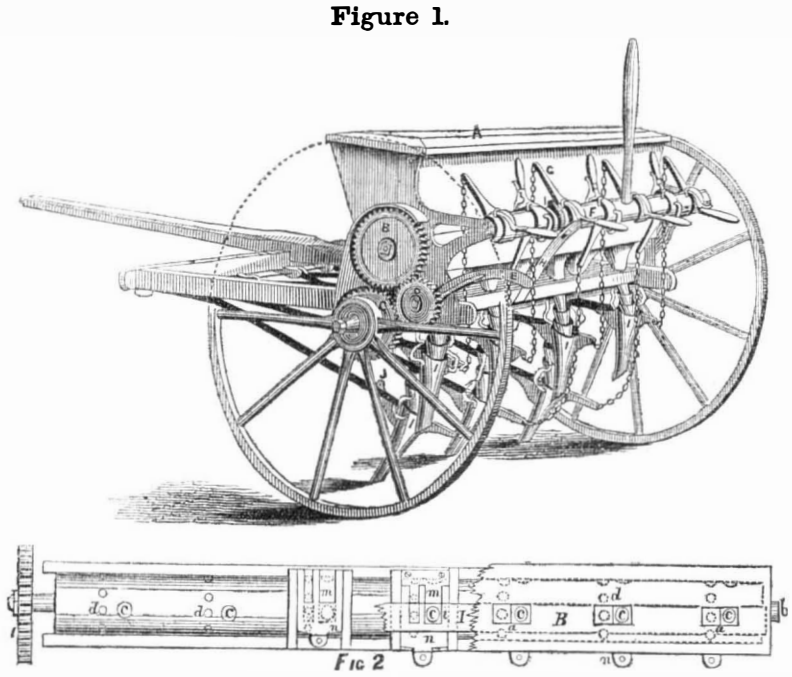


Fig 2

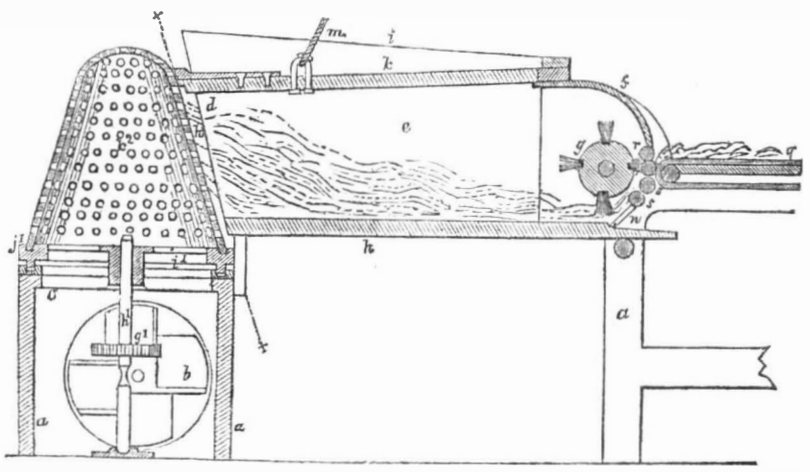
in sections, one section is made lapping over the other, and united by a flexible connection, such as a piece of leather. This arrangement makes them lap up over one another when the chains of the collars are raised to lift the spouts above the ground. H is a catch rod, which has a slot in it to slip over a button on the shaft, F, and retain it in any position, so as to keep the tubes stationary when lifted up. These tubes or spouts are suspended on levers extending from the front, and the chains behind are only for lifting them up. One of the suspending levers is represented by J.

By reference to fig. 2, we would state that the distributing cylinder revolves under the fixed bottom, B, of the hopper, A, fig. 1. The cylinder receives the seed from the hopper through slits, *a a*, in the bottom of the hopper, and between the hopper and cylinder is a space wherein a slide, I, having also oblong slits, *i*, in it, is made to close or open communication between the hopper and the distributing cylinder. The seed passes into the cylinder by the holes, *c*, and *d*, the latter being smaller and more close together than the former for small seed; *b* is the end of the seed cylinder shaft. This shaft may be provided with various gear wheels, to give the cylinder any required speed. Under the bottom of the hopper, (every two rows, *c*, *d*,) is a pair of metal plates, one, *m*, with a pair of holes in them situated over the other holes, *c*, *d*, and the other, *n*, sliding in rebates on *m*, to close or leave open the holes in the said plates. These slides are worked behind by rods, so that the seed can be shut off from any one spout—a very convenient and useful arrangement.

The seed passes from the hopper through the slits mentioned into the revolving cylinder through the holes, *c*, and *d*, and then through the same openings the seed is deposited in the spouts when the cylinder holes revolve to the under side. By gearing the revolving cylinder with the axle, various speeds can be given to the distributing cylinder, to vary the amount of seed for any given quantity of ground to be sown. The seed can be let on and shut off from any one spout. One spout can be lifted, or all can be lifted at once as required, all the seed can be shut off at once from passing from the hopper by the large top slide. The spouts are hung in a fine manner on the levers, J, spoken of, so that one or any number of spouts may be taken off at any moment by drawing out a pin. This makes the machine very convenient and valuable; its whole construction and operation appears to be complete in every respect.

More information may be obtained of the inventors by letter.

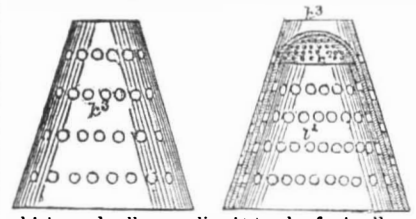
MACHINERY FOR MAKING HAT BODIES.---Figure 1.



This is the improved American machinery for the manufacture of hat bodies, which was employed in the building at Hague street, this city, at the time of the dreadful explosion in the early part of last year. It has recently been patented in England, and described in "Newton's Repertory of Inventions," the patent having been received by and in the name of W. E. Newton, Esq.

Figure 1 is a longitudinal vertical section; figure 2 is a vertical section with a bat wrapped around with a felt cloth. Figure 3 is a view of the perforated cap. Hat bodies are made of fur and fine wool, and are not woven but felted; they are made of the desired shape by a very scientific process. The principle employed is a vacuum process, which makes the wool fly on to a perforated cap, in the inside of which revolves a fan, and the wool sticks on this cap, it revolving all the time until a felt is formed on the said cap of sufficient thickness to form the hat body. Figure 1 shows the whole operation: *a a* is a frame; *b* is an exhausting fan revolving in a chamber, *c*; K³ is what is termed a *former*, it is made of thin copper and perforated; *e* is a trunk, with an aperture, *d*; this trunk is connected with the case, *f*, in which is a rotary brush, *g* The trunk bottom, *h*, is flat and is inclined towards the mouth; *i* is one of the sides of this trunk, it is made of thin sheet copper, capable of being easily bent to change the shape of the mouth, *d*, easily, so as to direct more or less of the wool on any part of the hat on K². The top, *k*, of this trunk is flat; it tapers conically towards the mouth, *d*. The back part of the trunk, between the bottom and lowest of the rollers behind the brush, *g*, is open for the admission of air, which flows towards the exhaust inside of the *former*; this aperture is represented with a regulating valve, *n*, to regulate or stop the current. The fibres of wool are fed to the brush from an apron, *q*, by the feeding rollers, *r r*, which are covered with cloth; below these are other two rollers, *s s*, against which the fibres are brushed; these feed rollers receive motion by a belt from other machinery. The exhaust fan, *b*, also receives rapid motion by gearing driven from a main shaft (not shown); *g'* is a worm wheel on a vertical shaft, *h'*; this shaft has an arm, *i'*, which carries a grooved rim, *j'*, into which groove is fitted the lower edge of the perforated *former*. The *former* should fit snugly in this rim, air-tight, but yet be easy of removal. The fur is spread on the apron,

Fig. 3. Fig. 2.



which gradually supplies it to the feed rollers. The brush, *g*, throws the wool forward, and it flies on the *former* and sticks to it. At the commencement of the operation the valve, *n*, is kept close, to check the force of the current, until a film of fibres is laid on the *former*, when the said valve is gradually opened. As soon as the required thickness of bat has been obtained, the operator takes a wet cloth, wraps it around the bat, and takes off the *former* and the bat on it. A metal cap, K³, is put over the felt covering, and then a shield, *l'*, fig. 2, placed inside within the *former*, and then the whole, as shown in section, fig. 2, is immersed in hot water to harden the *bat*. The holes admit the water freely to the bat, and the shield, *l'*, prevents the *former* from collapsing, when the whole is drawn out of the water. While the hardening and taking off process is going on, another *former* has been placed on the arms, *j'*, and another felt is forming. To witness the operation, the wool begins to cover the *former* like a *mist*, and gradually the hat body assumes shape and is formed.

Messrs. Taylor, of this city and Newark, N. J., are the owners of the patent.

The Galignani says that a doctor died in France, who, when his effects came to be examined, turned out to be a person named Pattison, once a great robber in Vermont. It speaks of his lame leg, and we infer from it, that it is a revamped story of old Capt. Thunderbolt.

© 1851 SCIENTIFIC AMERICAN, INC.

Scientific American

NEW YORK, APRIL 12. 1851.

Give us the Name of the Inventor. English Patent Laws.

Some time ago, there was no small amount of agitation in England respecting the necessity of reforming the patent laws. The agitation appears to have almost died away, and we suppose the present session of Parliament will terminate without any reform being accomplished. The subject of ecclesiastical titles is now agitating all England, Scotland, and Ireland, dwarfing the subject of making good laws, for the encouragement of men of genius—those men whose skill has built the Crystal Palace, and whose genius is about to be exhibited in a more glorious and enduring contest for old England, than Poictiers or Waterloo. The law-makers of every country, our own not excepted, are so weded to the selfish interests of high dignitaries, titular fools, and party scheming, that they have but little time to devote, to reforming bad patent laws which hang like millstones about the necks of really great men, though not conspicous because they are generally poor.

There is one reform which we would like to see carried out in England, and that at the earliest possible period,—it is one for which the London Patent agents must be held somewhat responsible. We mean the granting of English Patents in the names of the real inventors, the same as we do in America. Within the past two weeks, we have noticed no less than three American inventions for which English patents have been granted, but not in the name of the inventors; no, but in that of the patent agents, with the forcible inference, "communication from abroad." Let us have the names of the inventors, let them have the full credit of their inventions if they have nothing more. One of the inventions we speak of was Dr. Gorrie's machine for making ice, which has been more than once noticed in our columns; the second is the hat body machinery illustrated on another page, and the third is "Paine's Light." Specifications of patents appear in English Journals granted to A, B, C, D, the patent agents, who are no more the inventors than we are. This is not right, although it is customary. It is true that patents are granted to those who introduce improvements, but it would show some feeling of rectitude, if the names of the improvers or discoverers were inscribed on the face of the patents. We hope this subject may receive the attention which it merits, and lead to the performance of a very simple duty, but the more necessary to be performed on that very account.

Patent for "Paine's Light."

By the last number of our worthy contemporaries, the London Patent Journal and the Mechanics' Magazine, we have illustrations and descriptions, of "Paine's Light," which has recently been patented there. There is something in the descriptions given which we cannot well understand; but for this we would have given them to our readers this week. We wait to receive more full (if there can be) explanations, and then we will present the drawings and descriptions of the same, which are very different from those of Dr. Colton, that have been printed in so many of our papers. Mr. Paine is going to Washington in a few days, with a fine machine as a working model of it, and we may be able to present some views of the same.

It is our intention to pursue this subject until the whole truth is laid before our readers.

The World's Fair in America.

A meeting of Delegates of the various Railroad and Steamboat Companies, was held on Thursday last, at the Astor House, to take into consideration the increased facilities for travellers which will be required on the occasion of holding a "World's Fair of the Industry of all Nations," at New York, in 1852. Gen. John S. Darcy was appointed Chairman, Louis Perrine, and James S. Green, Esqs., were appointed Secretaries. Resolutions were passed in respect to the proposed Exhibition being held on Governor's Island. The meeting adjourned to assemble again at 12 o'clock on the 13th of this month, at the same place. The directors of railways, steamboats, and the proprietors of stages, are invited to cooperate in this work, and send representatives to this meeting.

We sincerely hope that a "World's Fair" will be held in America; we brought the subject before our readers more than a year ago. We can have a World's Fair worthy of our great country, and one that will do honor to America, if the right kind of men *take hold* of the work. As the subject has now been brought before our people, we will sacrifice some honor if we do not carry it through. The French say we are a people of *splendid resolves*; let us do more than resolve in this affair. Let it not be like that mockery of a pageant, the New York Washington Monument.

Rice and its Cultivation.

Rice is the principal food of the millions of Hindostan, China, and many other nations. To provide against its rapid decomposition in those tropical climates, nature has provided it with a very indestructible coating. The haulm, or chaff of rice, is a vegetable sand paper. After being milled, rice is readily destroyed by the weevil; but rough rice is exempt from the depredation of every species of insect—if stored carefully, therefore, it will be as good for food at the end of twenty, perhaps a hundred years, as it was the very day it was gathered from the field. The indestructibility of the chaff has long been known—the ash of the chaff of rice contains ninety-seven per cent. of silica.

American rice is far superior to that of any other nation,—Georgia and South Carolina raise the best rice in the world. The Charleston rice sells for just double the price of Bengal, in the London market. When rice is sent on long voyages, it soon spoils if it has been dressed, therefore it is best to send rice in its rough state across the Atlantic. It will be seen by our list of patents, this week, that a patent has been granted to Mr. Peter McKinlay, of Charleston, for an improvement in Rice Hullers. The most improved rice dressing machines are of American invention, and have been introduced into Europe. There the rice is dressed after being sent over in the rough state. This mode of treating the grain has greatly enlarged its European consumption, as it is perfectly sweet after the voyage, when not hulled. The superiority of American rice depends either on climate or superior cultivation—the latter in all likelihood. About seventy years ago, almost all our rice was the product of inland swamps, but the greatest part of the rice crop is now grown on flats, near the sea coast rivers, which are subject to overflows. Tide swamp lands, well adapted to the growing of rice are found almost exclusively within the limits of the two Carolinas and Georgia; on the rivers emptying into the Gulf of Mexico there are lands on which rice may be planted, but the rise and fall of the tide in the Gulf being only two feet, the fall does not admit of drainage sufficient for successful cultivation. For similar reasons, that of climate being superadded, the culture has not been attempted north of Cape Hatteras, where the rise and fall of the tide is only three feet. On the coast of Georgia and the Carolinas the tide rises and falls from six to seven feet. These tide swamp lands are limited to a small extent of sea-board. They commence at that point on the southern rivers, where the salt water ceases and the fresh begins. These fields then extend up the rivers on both shores for a distance of about 12 or 15 miles, and in some places less. In hot summers, the lower lands are affected with the salt, when the planters cannot irrigate. At the upper limit, wet seasons bring down freshets, which oftentimes prove very destructive, the crops being immoderately submerged. Midway between these limits there lies a body of land, of no great extent, measurably exempt from both these causes of damage, which are usually denominated lands on the best pitch of the tide; these are the most valuable lands in those States. Of the sixteen or seventeen millions of acres included within the limits of South Carolina, these tide swamp lands constitute so small a fraction, that were they abstracted from the mass of the State their loss would scarcely be perceptible—yet the gross product of these, in an average of seasons, does not fall short of two millions of dollars per annum.

Artificial irrigation has been practiced in oriental countries from time immemorial;—in Egypt and Hindostan, artificial irrigation is performed, in many cases, by gangs of laborers handing up buckets full of water, from the river up the bank, from which it is sent away over the flat lands in small channels. Pumps and the Persian Wheel were and are used for this purpose; and bullocks working a gin, to actuate the Archimedian screw pump, forcing up water from rivers, is not an uncommon method of irrigation practiced in the East Indies. At the South, artificial irrigation has received no small attention: an improved machine for that purpose has been introduced into Charleston by our friend Mr. N. H. Lebby, which promises to confer many advantages upon the cultivators of rice. It is thus described by the Charleston Courier. "In compliance with the invitation extended by Mr. Lebby, quite a number of visitors assembled yesterday to witness this curious and successful application of machinery to a purpose in which our rice planters especially are deeply interested. It is adapted both to draining and irrigating lands, and when set in motion by a steam engine of 6 horse power, is capable of raising from five to six thousand gallons per minute, which might be greatly increased by additional motive power. It has been inspected by several experienced planters, and pronounced to be a most valuable agricultural appendage, sufficiently simple to be worked without difficulty by the negroes on plantations, and not liable to get out of repair. The credit of this clever adaptation of well known philosophical principles to the improvement of the culture of one of our great staples, belongs to a young Charlestonian, who, to a natural genius for mechanism, adds the fruits of years of laborious study and practice, in his high and honorable vocation. Mr. Leboy's industry and attention to business have been rewarded with a liberal share of constant active employment, and were his establishment extended to double its present capacity, so brisk are the openings for the efforts of this deserving class of our community, that we feel confident the increased investment of labor and capital would prove profitable and desirable to all concerned."

This machine embraces a valuable improvement of the submerged turbine wheel, which we hope will be the means of opening up a vast field for improvement by the introduction of a cheap system of artificial irrigation.

An American Machine for Turkey.

Mr. George Wright, of Washington, the inventor and patentee of a most ingenious machine for making percussion caps, being on his way to Constantinople with it, we take this opportunity of bringing it specially before our people, hoping its ingenious inventor may meet with higher rewards abroad, than he has in his native land. Elaborate drawings of this wonderful invention were exhibited to us by the inventor, in company with Klein Woodward. They intend introducing it to the attention of the Turkish Government, and purpose also to visit other foreign powers with this intent. Mr. Wright, the inventor, has been subject to the inconvenience of being destitute of the required means to secure this invention by patent, abroad. It would, however, puzzle any mechanic to construct one without the personal superintendence of the inventor.

The machine occupies a space of about 3 by 4 feet; it is supplied with copper, in sheets, 14 by 48 inches; the fulminate, or powder, is deposited in a small hopper for its distribution in the caps as they are formed. The machine, being supplied with the material, it is put in operation by steam power, and the sheet of copper is fed from right to left and left to right, alternately, rolling in at the proper interval. The star or blank, for the cap, being cut, it is quickly transferred to the forming die, where it is pressed into the required form. The cap is then lifted from the die by means of a punch beneath, and lodged in the periphery of the charging plate; it is then carried around by the plate, passing under the hopper, containing the powder, where, receiving its proper charge (half a grain), it passes on under the charging punch, where the powder is firmly pressed in the bottom of the cap. The cap is then thrown from the plate, falling into a drawer beneath prepared to receive them. It then continues its operation of cutting, forming, charging and pressing, in rapid succession, until the whole sheet, as if by magic, is transformed into caps in a finished state, ready for use. One man or boy, only, is required to superintend its operation, producing 5,000 caps an hour, or 50,000 per day. This is the only invention in the world which makes a cap complete at one operation.

The copper is not required to be cut into strips, but is used as it comes in sheets from tha rolling mill. These sheets may be of indefinite length.

Major A. Mordeci, commander of the Washington Arsenal, says, in his Report, for 1850, that this machine performs its work perfectly, and is the subject of admiration to all visitors at the Arsenal. Several officers of the Ordnance Department, who have examined the manufacture of percussion caps in several European countries, agree in the opinion that this is by far the most complete machine which has been made for that purpose.

The ingenious inventor has also arranged a machine for varnishing the caps, by means of which the work is done more expeditiously than it can be by hand.

Electro-Magnetic Annunciator for Hotels.

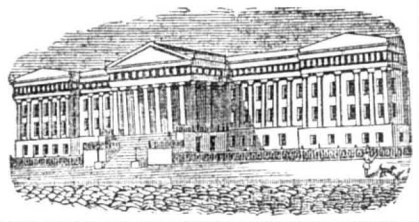
It is well known that the American Bell Crank Annunciator for hotels, whereby a number is shown in an opening in a box in the office, agreeing with the number of the room in which the wire has been pulled, possesses not a little celebrity, and justly so. The one, however, about which we are now going to say a few words, is as far superior to any other that we have seen, as we can imagine.

The numbers of the various rooms are confined in a box, blocked out with small windows, like a chequer board; behind each window is a small recess and on the back partition of it there are the numbers of the different rooms stationary—one number opposite each small window. There are a set of slides, with a notch in each (each one capable of being moved singly), which are moved up by an arm to cover the numbers of the rooms, and hide them from view. These slides are iron, and when they cover the numbers a small pin catches each and holds it in position. Behind each slide is an electro magnet, connected with a wire to a battery, and a key with the number of the room on it is placed in each room, while the box spoken of is in the bar-room. By pressing upon the key the circuit is closed, a bell is struck in the bar-room, the slide spoken of before is attracted by the electro-magnet, falls down and the number of the room is uncovered in an instant, and shown in the small window. There is a wire for each key; the action is very rapid, and none of the parts liable to wear out or be broken. A small battery, to work this Hotel Telegraph, will only have to be renewed about once in three weeks, at but little expense, and the whole can be constructed for less money than any of the old annunciators. The inventor of this is Mr. Buckley, but we saw the instrument at the Telegraph Rooms of Mr. Norton, No. 177 Broadway, the assignee and manufacturer, and where one may always be seen. It is a beautiful and ingenious instrument, and we understand that all the new hotels are adopting it, and so they should.

The Crystal Palace.

We have just received from London a splendid engraving of the interior of the Crystal Palace. It will occupy the 4th and 5th pages of our next number. It is probably the largest engraving ever published in a paper in our country. This engraving, we believe, will be very acceptable to our readers, as it can be bound up and preserved as a part of the progress of Industry.

© 1851 SCIENTIFIC AMERICAN, INC.



☞Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.
FOR THE WEEK ENDING APRIL 1, 1851.

To Henry Boot, of New Bedford, Mass., for improvement in Machines for Folding and Measuring Cloth.

I claim, first, folding the cloth as it passes through or between the calender rollers during the process of calendering, or by passing it through or between a pair of revolving rollers similar to calender rollers, the said calender or other rollers being hung in a carriage which receives a reciprocating motion above or across a table, and a tilting motion at each end of its stroke, so as to bring each roller alternately, to bear on the table as it (the carriage) moves in different directions across it, thereby laying the cloth under the rollers on the table, in folds or layers, in the manner substantially as herein described.

Second, I claim making the reciprocating motion of the calender rollers of a certain fixed length, such length determining the length of the fold, and thereby measuring the cloth, substantially in the manner herein described. At the same time I wish it to be understood that I do not claim the measurement of cloth by folding it in layers or folds of a certain length, unless such layers or folds are laid by calender or other similar rollers. [See an engraving on page 84, Vol. 6, Sci. Am.]

To Marshall Burnett, of Boston, Mass., for improved Horse-shoe Nail Machine.

I claim making a horse-shoe nail by means of a stationary former, and a series of travelling and rotating cams, arranged and operating substantially as herein described and fully shown.

To C. O. Crosby, of New Haven, Ct., for improved machine for sticking pins on paper.

In the machine which I have now fully and exactly described, for sticking pins crosswise of narrow fillets of paper, to prepare it when so stuck for winding, and winding the same into coils, there are several parts which are common, or such as have been used by others, which I do not claim separately nor in other combinations.

I do not claim the upper feeding channel or inclined conductors, when made of straight bars, nor cylinders with parallel sides, which have been used for conducting wood screws and similar headed articles; nor the downward curved conductors, nor any other feeding channels, unless they are combined with the conical form of rollers or the separator.

I do not claim or use any kind of crimping bars, jaws, or clamps, as they have been heretofore used.

I do not limit myself to the precise form or arrangement of parts, nor the particular devices for moving them, for these may be much varied, without changing the principle of my invention, as set forth; nor do I limit myself to the single process of inserting only one pin at once, on only one edge of the fillet, for on the same principle, with only circumstantial variation of the machinery, I can insert several pins at once, on the same edge of the fillet, or on both edges of it, and other similar variations can be made by any competent machinist without any essential or substantial variation from the character of my invention, as described.

First, I claim the conical form of rollers to constitute my feeding channel for arranging the pins and moving them forward in the channel with the most suitably decreasing rates of descending velocity, as described.

Second, I claim the combination of the parts and the adaptation of my machine for feeding the pins, separating, and delivering them, crimping the fillet, and sticking the pins crosswise of such fillet, and finally rolling the fillet into a coil, substantially in the manner described.

I also claim the screw separator, as described, placed in the feeding channel, to restrain the natural descent of the column of pins, so that they may be delivered as fast, and no faster, than they are required for sticking, substantially as herein described.

To Jehu Hollingsworth, of Zanesville, O., for improvement in Wheat Fans.

I claim two or more chambers and areas in combination with a fan, for the purpose of clearing and separating grain, by using one and the same blast (to clean it) over and over again, any number of times, as herein fully described.

To G. D. Jones, of Jersey City, N. J., for improvement in Mills for grinding paints and drugs.

I claim the construction of a mill in which the grinding surfaces shall consist of a plane or planes, operating upon a cone as herein described.

I claim also the lever in combination with the muller for the purpose of regulating the feed, the whole being constructed substantially in the manner as set forth herein.

To Peter McKinlay, of Charleston, S. C., for improvement in Rice Hullers.

I claim operating the pestle by having it attached to a rod passing through the bottom of the mortar and receiving motion through a crank, or its equivalent placed below it, substantially as set forth.

[This is a very excellent Rice Huller.]

To Chas. Menson, of New Haven, Ct., for improvement in blasting rocks, etc.

First, I claim the use of an artificial binder, by means of which to restrain the action of the blast in opposite directions, by offsetting said action against itself, substantially as herein explained.

Second, I claim the use of the little packing wedge, or wedges, within the charge or blast chamber, substantially as described.

To Jabez Walker, of East Bloomfield, N. Y., for improved machine for forming a lock on sheet metal.

I claim the employment of a cam or cams on the tumbler, operating on two levers connected with the under side of a movable jaw, in combination with a spring or springs, substantially in the manner described, for the purpose of closing the lip and securing the plate, while folding and raising the lip and releasing the plate after the folding is completed.

[We have seen this machine operate, and can confidently say, it is a good one.]

To Jesse White, of Barnesville, Ohio, for improvement in Wheat Fans.

I claim the combination of the fan, air-trunk, and head, constructed and operating substantially in the manner and for the purpose herein described.

To J. M. Carr & J. Hughes, of Cambridge City, Ind., for improvement in Bran Dusters.

I claim the combination of two openings, both provided with valves or registers, with the runner and fan revolving within an upright cylindrical casing, the upper part of which acts as a beater, and the lower part as a bolting apparatus, substantially as described, for the purpose of separating the flour, which adheres to the bran after undergoing the ordinary bolting, the said process being regulated and adjusted to suit the circumstances of weather, &c., by admitting more or less air either above or below, by means of the registers, as set forth.

To Simeon Heywood, of Claremont, N. H., for improvement in connecting and disconnecting wheels and axles.

I claim the dog and the spring, combined and operating as set forth.

To David McCurdy, of Newark, N. J., for improvement in the manufacture of India Rubber.

I claim the combination of potash with rubber and sulphur, and submitting the same to a high degree of heat, whereby to produce the change upon rubber, known as vulcanizing.

To Henry Mellish, of Walpole, N. H., for improvements in Splint Machines.

I claim the combination of the cylinders with their cutters attached (for the purpose of giving a rounded form to the splints), and the cylinder with its spurs (for the purpose of dividing the splints in one direction,) with the circular cutter or saw, for the purpose of separating the splints from the timber, and a guide to guide the splints in the channel, the whole being arranged substantially in the manner and for the purposes set forth.

To Archibald Wieting, of Middletown, Pa., for improvement in Seed Planters.

I claim placing two or more hollow drill teeth in a direct line, one behind the other, managed and drawn by the same drag bar, the front tooth being made the largest, and so placed as to run somewhat deeper in the soil than its successor or follower, for the purpose of depositing fine manure or chemical agents, beneath the grain, when planted in rows, or otherwise as herein fully set forth.

To H. Gross & W. Campbell, of Tiffin City, O., for improvement in machines for cutting screws on bedstead rails.

We claim the peculiar form and manner of securing the V cutter to the cylindrical head, as described, that is to say, making the cutter as represented and letting the tapered end of the shank, into the recess, bringing the angular shoulder against the cylinder, and sustaining the bevelled points against the interior bevelled surface of the cylinder head, by which arrangement the instrument, during the operation of cutting is forced firmly against the head, the strain upon the confining screw being thereby greatly reduced, and the cutting tool itself strengthened.

To G. H. Knight, of Cincinnati, O., for Stone and Metal Conglomerate for paving, etc.

I claim forming a block suitable for paving, masonry work, or analogous purposes, of a conglomerate of iron and stone, by running the molten metal among broken stone, within a mould, either with or without the devices, substantially as herein described, for jointing and locking together, the contiguous blocks.

To J. J. Riddle, of Covington, Ky., for improvement in Brick Presses.

I claim the lip, hugging closely the rim of a wheel containing moulds, the said lip being a prolongation of a gradually narrowing feed trough, formed and operated, after the manner and for the purposes substantially as described, namely, the formation (by pressure of untempered clay) of a uniform and coherent brick.

DESIGNS.

To N. P. Richardson, of Portland, Me., for design for Air-tight Stoves.

To Frederick Schultz, of Philadelphia, Pa., for design for Air-tight Stoves.

(For the Scientific American.)

Practical Remarks on Illuminating Gas.

[Continued from page 230.]

The introduction of gas as an illuminating agent could not be confined to the narrow limits of Europe alone; American enterprise entered boldly into the work, and it was successfully introduced into the United States, in the city of Baltimore, in the year 1820, and shortly after the example was followed in Boston, New York, and Philadelphia; and within the past few years works for the manufacture of coal gas have been erected in many of our smaller cities, both seaport and inland, commercial and manufacturing, and are now in successful operation, dispensing not only the beautiful light to the gratification of their citizens, but remunerating the manufacturers in a manner wholly meeting their most sanguine expectations. It is not improbable that within a few years all the inhabitants of cities and towns, and even private manufactories and residences will be enjoying the dispensing and fascinating light; and the beautiful thought of Murdoch, in 1664, after having slumbered for nearly two centuries, will become a blessing widely diffused throughout the whole civilized world.

Illuminating gas occurs in nature, but the quality is much inferior, generally, as compared to that of the artificial product. It has always been observed, where matter of organic origin is undergoing gradual decomposition, that more or less carburetted hydrogen is evolved; this is noticed more particularly when the decomposition takes place under water, as we observe in ponds, marshes, and rivers. If a pole be thrust into the mud of a pond, bubbles of air will rise to the surface of the water, which may be collected in a jar; this air, (as it appears to be), is light carburetted hydrogen gas; it will ignite and burn with a yellowish blue flame; it consists of carbon and hydrogen, like the artificially produced illuminating gas, but it contains a smaller quantity of carbon, and therefore burns without giving a bright light.

The celebrated fires at Baku, on the Caspian Sea, are due to the ignition of a gas which issues from the earth, and which Herz has shown to be light carburetted hydrogen and some naptha vapor. In New York they have gone still farther, the practical tact of the Americans having already made use, for industrial purposes, of similar sources of gas at Fredonia, on Lake Erie, where the gas is collected in holders and used for illumination.

It appears from a paper of Mr. Richard Cowling Taylor, published in the Philosophical Magazine, for March, 1846, that the Chinese, although perhaps not gas manufacturers, have been acquainted with the use of coal gas both for illuminating and heating purposes, long before the knowledge of its application was acquired by Europeans. Beds of coal are frequently pierced in China, by the borers for salt water, and the inflammable gas is conveyed in pipes to the salt works, where it is used for boiling and evaporating the salt; other tubes convey the gas intended for lighting the streets and the larger apartments and kitchens. When there is still more gas than is required, the excess is conducted beyond the limits of the salt works, and there form separate chimneys or columns of flame. The burning fountain of Dauphine is of like origin; phenomena of a similar nature occur in the Cordilleras, in Hungary, Greece, England, and many other countries.

Coal Gas.—Bituminous coals are alone used in the generation of this description of illuminating gas; and it is owing to its bituminous qualities that coal is employed for this purpose. Bitumen, the quintesence of all gas coals, is a black, carbonaceous substance, found in the earth, generally combined with coal, but sometimes is found disintegrated upon the surface, and often constitutes considerable beds, as in the isle of Trinidad, where it occurs over an extensive district in scattered masses. It has not been observed among the primitive or older strata, but only in the secondary and alluvial formations. The origin of bitumen is as little known as that of most of the productions of nature; but that found upon the surface is supposed to emanate from some highly bituminous bed of coal in a distinctive state of distillation in the earth. The quantity of carburetted hydrogen gas obtained from coal is almost entirely due to the amount of bitumen contained therein, therefore coal, rich in bitumen, yields a large per centage of illuminating gas, while that poor in bitumen the contrary. Bituminous coal, when heated to a certain degree, swells and kindles, and frequently emits remarkably bright streams of flame; this flame is illuminating gas. We perceive the evoluotion of this elastic fluid during the combustion of coal in a common fire place; the only difference between the stream of gas in the fire place and that at the burner, is, that the former is ignited and consumed as soon as it is evolved, while the latter is conveyed into gas-holders, stored and distributed as the wants of the community may require.

Having described the substance from which coal gas is derived, we will now attempt to delineate, in as lucid a manner as possible the apparatus in which illuminating gas is generated from coal, and the different processes through which it passes, from the crude lump of coal to the beautiful fluid in its perfect state; and also the new combinations formed while undergoing decomposition. The apparatus for the manufacture of coal gas, which I shall endeavor to describe, is considered as perfect as any now in use, and has been adopted by nearly all the large coal gas manufactories in this country.

J. B. B.

(To be Continued.)

We request the attention of our readers in a particular manner to the above subject.

© 1851 SCIENTIFIC AMERICAN, INC.

TO CORRESPONDENTS.

M. C., of Ill.—The sketch of your improved Corn Planter has been examined, and we are of the opinion that it possesess novel features; it is different from Groshon's. You can send us a model at any time, by express.

H. M. C., of Ohio.—In this section iron is not rolled as you state, the machines now used for that purpose are much more convenient and economical than the one described in your letter. We cannot advise you to apply for a patent, as it is probable that none could be obtained for the mere addition of a supplementary roller.

A. P., of N. C.—Muriatic acid consists of chlorine and hydrogen; it is contained in great abundance in sea water, in combination with soda and magnesia. Oxygenated muriatic acid is another name for chlorine.

S. L., of Ill.—The books have been sent. If your diamond is spoiled in the point, we know of no one who re-points such instruments. The expense will be about as great as a new one, for the edge of a cutting diamond is a natural one.

G. W., of Mass.—It will probably be about 2 months before your application will come up for examination—the applications seem to be accumulating at the office.

E. W., of N. Y.—For particulars concerning back volumes of the Scientific American, see notice in No. 27, Vol. 6. We could not exchange the Scientific American for Sear's works.

C. L. E., of Mich.—We have not the name of Mr. McCallance upon our books at your place, and the meaning of your letter we do not understand.

A. J., of O.—No doubt but your friend would make a good agent for us, but we do not employ agents to travel and canvas for subscribers for the Sci. Am., as those other papers do; our circulation is maintained and extended by voluntary subscribers and good local agents like yourself.

J. G. E., of N. C.—The $3 which you enclosed for Mr. Pipkin we have credited to him on account of subscription, as you directed.

"G. B., of Ct.—As long as you receive the paper you may conclude that you are not in debt to us. We have but one custom, and by it all our patrons are served alike, viz., when the time has expired for which a person has paid his subscription, we stop the paper until again ordered. We never present bills for unpaid subscriptions.

M. R. L., of Mi is.—Your plan of bringing the crank past the "dead points," is ingenious and new; but we do not see what gain is derived; we do not see any loss in the simple crank, and we know of no arrangement to equal it in simplicity and effective action. We would advise you not to waste money on the invention.

E. A. H., of Ill.—The best work on Electricity, &c., is $1,25; Snow Harris's small work is good, costs 62 cents. We cannot give you the information about the cast and wrought iron.

W G. G., of N. Y.—We will publish the information you want before closing the articles on Hydraulics.

L. H., of Ohio.—There is nothing novel in your plan for a rotary; spring valves have many times been shown us in connection with this subject. They will not do, this you may depend upon. We should like to entertain the good opinion you speak of, if possible, but we feel confident it cannot be made to work. We examined a rotary, not long since, in operation here, essentially the same as yours. It required too much steam to drive it.

A. D. B., of Geo.—Your polite favor of the 21st ult. is received, with $4. In regard to the models, you have done perfectly right. No apology is necessary.

H. M., of Vt.—The sketch of the bevel plane has been examined: we regard the contrivance as sufficiently novel to justify an application for a patent, and request you to forward a model. It can be sent by express or otherwise, as you may find it convenient.

S. S., of Pa.—Your gun is very ingenious, and your remarks exhibit a humane heart.

C. W. P., of Pa.—See pages 281 and 293, Vol. 5, Sci. Am., for good whitewash receipts.

G. L. F. B., of Me.—There are various ways of making a door operate a bell when it is opened. We do not see how a claim could be based on your arrangement. The moisture does not affect Maynard's percussion paper. The floating bridge is made to float any train, so as never to sink below the track, although it may be a quarter of an inch above it. It is nothing new.

J. S., of Pa.—There is a most excellent article on Steam and "Stame" in one of the London magazines. There is something about explosions which appears to be inexplicable, but the great root of the evil is recklessness.

T. W., of N. Y.—It is not possible to give a correct rule for calculating the loss of power by back-water, unless the force of the back-water is known, and the amount (weight) of water carried back by the buckets. By a little reflection you will see the force of this. We will give you the other information next week. We did not take into consideration the back lift, because it was not spoken of.

T. J. K., of Va.—A man will lift twice as much with a two foot lever as a foot one, but then he will take double the time: whatever is gained in power is lost in speed. A lever does not create power.

H. U., of N. Y.—The power of the press is not generally required to be more than ten times the multiple of one.

S. P. S., of Ohio—You will have all the rules you want for calculating the power of wheels, before our articles on Hydraulics are finished.

L. R. P., of Me.—Your favor of the 2nd inst., is received and the amount credited to the respective subscribers. We shall examine your diagrams as early as possible.

T. R. C., of Ill.—There are very many machines for drilling and planting corn now in use. We do not remember to have seen one precisely like yours, and think a patent could be obtained on a limited claim. A model will be required.

J. H., of Ohio.—In answer to your favor of the 27th ult., we would state that we have no knowledge of the improvements referred to, and think they could not have amounted to anything practicable, or we should have known it. We are unable to refer you to any new improvements made of late in this branch.

T. L. P., of Md.—The pump you refer to is an excellent one we believe. Mr. W. will be called upon to answer your inquiries.

M. G., of Charleston, S. C.—By macerating a small piece of new-baked bread in cold water, sufficient to dissolve it, the taste of the latter, if alum has been used by the baker, will acquire a sweet astringency; or a heated knife may be thrust into a loaf before it has grown cold, and, if it be free from that ingredient, scarcely any alteration will be seen on the blade; but if the alum has been used, the blade, after being allowed to cool, will appear slightly covered with an aluminous substance.

E. G., of N. Y. City.—A very simple test for lead and copper metals in wine and cider, exists ready formed by nature: pour into a glass of suspected wine, cider, or perry, a few drops of Harrogate or Strathpeffer water; if any lead or copper be present, it will fall down in the state of a black precipitate being combined with the sulphuretted hydrogen, by which these waters are impregnated.

S. H. W., of Mo.—We do not believe you can obtain a patent for your arrangegement. Substantially the same device was secured by patent to A. McKinney, of this State, a few month since.

R. E., of Geo.—Non-conductors are substances which carry off free electricity slowly when touched by an electrified body; or, if their condition of electrical indifference is disturbed at any one point, they become electrical at that point only; and if the whole surface be excited, and they are then touched by some conductor connected with the ground, they part with their free electricity only at the point of contact. Their characteristic is, that they retain free electricity for a length of time, and that they check its motion.

E. C. & G. A., of Mass.—Your communication of March, in regard to the polishing iron, will come up as soon as possible.

A. E. J., of Miss.—In Reaumer's Thermometer the freezing point is marked 0, or zero, and the boiling point 80 deg. The degrees are continued, of the same size, below and above these points, those below being reckoned negative.

E. B., of Ct.—Your papers have been carefully filed away for future reference. We thought the plan new, and for aught we knew, useful.

Money received on account of Patent Office business since April 2 :—

G. J. W., of Me., $25; W. J. McA., of Ga., $75; C. L., of Phila., $28; H. P., of Mass., $20; J. G., of Mass., $28; D. A., of N. Y., $50; M. C. B., of N. H., $15; G. W., of Ky., $65; S. C. A., of N. Y., $30; J. B., of Mass., $20; W. B., of O., $20,25.

Specifications and drawings of inventions belonging to parties with the following initials, have been forwarded to the Patent Office since April 2:

T. & G., of N. Y.; A. S. B., of N. Y.; G. J. W., of Me.; H. P., of Mass.; D. A., of N. Y.; M. C. B., of N. H., and J. B., of Conn.

New Edition of the Patent Laws.

We have just issued another edition of the American Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office We shall continue to furnish them for 12 1-2 cts. per copy.

ADVERTISEMENTS.

Terms of Advertising:

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and outs cannot be inserted in connection with them at any price.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Branches of our Agency have been established in London, under the charge of Messrs. Barlow, Payne & Parken, celebrated Attornies, and Editors of the "Patent Journal;" also in Paris, France, under the charge of M. Gardissal, Editor of the "Brevet d'Invention." We flatter ourselves that the facilities we possess for securing patents in all countries where the right is recognized, are not equalled by any other American house. MUNN & CO.,
128 Fulton street, New York.

WILLIAM W. HUBBELL—Attorney and Counsellor at Law, and Solicitor in Equity, Philadelphia, Penn.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and enclosing one dollar as fee for copying.

STEAM ENGINES FOR SALE.—A one, two, three, and four horse power engine, of simple construction and substantially made; they may be had separately or with boilers, and can be shipped without taking in pieces to pack. I am also prepared to do all kinds of light machinery work on reasonable terms. Orders, post-paid, promptly attended to. Address CONRAD SIMON, Louisville, Ky. 30 2*

LAWRENCE SCIENTIFIC SCHOOL—Harvard University, Cambridge, Mass.—Special Students attend daily, from 9 o'clock, A.M., till 5 o'clock, P. M., in the laboratories, and under the direction of the following Professors:—Louis Agassiz, Professor of Geology and Zoology; Jeffries Wyman, M. D., Professor of Comparative Anatomy; Henry L. Eustis, A. M., Professor of Engineering and Physiology; Eben Norton Horsford, A. M., Professor of Chemistry. Instruction is also given by Prof. Pierce in Mathematics; Prof. Lovering, in Physics, and the Messrs. Bond at the Astronomical Observatory. All lectures delivered to under-graduates of the College are free to members of the Scientific School. For further information apply to E. N. HORSFORD,
29 6* Dean of the Faculty.

LATHES FOR BROOM HANDLES, Etc. We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles, and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid) MUNN & CO.,
At this Office

PORTABLE GRIST MILLS—Of the best construction, at the following prices:—12 inch hand mill, $40; 16 in. do., $45; 18 in. Burr stone, power, $90; 24 inch do. $100; 30 in. do., $150. $15 additional for the gearing of the 18 and 24 inch; the 12 and 16 inch are geared with cranks. The 30 inch is driven from the spindle; 18 in., 2 horse power, will grind 4 bushels per hour; 24 in., 3 horse, 5 bushels; 30 in., 4 horse, from 6 to 8 bushels; speed, 300 revolutions per minute. Address (post-paid) to
MUNN & CO, at this Office.

IRON FOUNDERS MATERIALS—viz., fine ground and Bolted Sea Coal, Charcoal, Lehigh, Soapstone and Black Lead Facings of approved quality. Iron and brass founders' superior Moulding Sand, Fire Clay, Fire Sand, and Kaolin; also best Fire Bricks, plain and arch shaped, for cupolas &c.; all packed in hogsheads, barrels or boxes for exportation, by G. O, ROBERTSON, 4 Liberty Place, near the Post Office, N. Y. 22 3m*

MATAPAN MACHINE WORKS—Corner of Second and A sts, South Boston. The undersigned have recently enlarged their business and are now prepared to offer a great variety of Machinists' Tools, viz., Engine and Hand Lathes, iron Planing and Vertical Drilling Machines, Cutting Engines, Slotting Machines, and Universal Chucks; also Mill Gearing and Wrought Iron Shafting made to order.
22 12* GEO. HEPWORTH & SON.

SASH AND BLIND MACHINE—Patented by Jesse Leavens, Springfield, Mass. The machine planes, molds, mortises, bores, tennons, copes, franks, outs off, rips up the stuff, planes the blinds, shades, and sets out the sash The machine is 4 by 5 feet, weighs 800 lbs., requires two horse-power to drive it, and cost $300 cash—extra charge for the right to use. Shop, town, county, and State rights for sale. Orders from abroad will be promptly attended to by addressing JESSE LEAVENS, Palmer Depot, Mass.
27 8*

FELLY CUTTING MACHINE—Messrs. JOSEPH ADAMS & SONS, Amherst, Mass., offer for sale town, county, and State rights, or single machines, with the right to use, of their unrivalled Felly Cutting Machine, illustrated in No. 5, Vol. 6, Scientific American. It is portable, easily kept in order, requires but little power to drive it, and will execute in the most rapid and perfect manner, cutting 60 good fellys in one hour. 27 8

STEAM ENGINE FOR SALE—We have for sale a 12 horse-power Horizontal Engine, complete, with flue boiler, second-hand, newly re-fitted, in excellent condition, has not been used to injure it; solid cast iron frame, manufactured by the "Novelty Works," this city. Its original cost was $1,450, and will now be sold for $900 cash, the owner having no further use for it. Apply to MUNN & CO. 27tf

WOODWORTH'S PATENT PLANING MACHINES: 1851 TO 1856.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's machines. Persons holding licenses from the subscriber are protected by him against infringement on their rights. For rights in the unoccupied counties and towns of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 28 7eow*

TO TIN PLATE AND SHEET IRON WORKERS.—ROYS & WILCOX, Mattabesett Works, East Berlin Station, on the Middletown Rail Road, manufacture all kinds of Tools and Machines of the best quality, both in material and workmanship. This establishment being the only one where both tools and machines are manufactured, superior inducements are offered to the trade; all work warranted, with fair use. Agents in most of the principal cities of the United States and Canada. Orders promptly attended to. F. ROYS,
E. WILCOX.
Berlin, Conn., Nov. 1, 1850. 7 1amly

A CARD.—The undersigned beg leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton st. 29 3m*

DICK'S GREAT POWER PRESS.—The public are hereby informed that the Matteawan Company, having entered into an arrangement with the Patentee for the manufacture of the so-called Dick's Anti-Friction Press, are now prepared to execute orders for the following, to which this power is applicable, viz.—Boiler Punches, Boiler Plate Shears, Saw Gummers, Rail Straighteners, Copying and Sealing Presses, Book and Paper Presses, Embossing Presses, Presses for Baling Cotton and Woollen Goods—Cotton, Hay, Tobacco, and Cider Presses; Flaxseed, Lard, and Sperm Oil Presses; Stump Extractors, &c. &c. The convenience and celerity with which this machine can be operated, is such that on an average, not more than one-fourth the time will be required to do the same work with the same force required by any other machine.
WILLIAM B. LEONARD, Agent,
13tf No. 66 Beaver st., New York City.

MACHINES FOR CUTTING SHINGLES. The extraordinary success of Wood's Patent Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights remain unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 10tf

GURLEY'S IMPROVED SAW GUMMERS—for gumming out and sharpening the teeth of saws can be had on application to G. A. KIRTLAND, 205 South st, N. Y. 10tf

SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., will have finished 2 Power Planers ready to ship by the 1st of Feb., that will plane 9 feet long, 31 inches wide, and 24 inches high, with angle feed; counter shaft, pullies, and hangers, splining and centre heads, with index plate, and weigh over 5,000 lbs.; also 2 power planers that will plane 5 feet long, 22 in. wide, and 20 in. high, with counter shaft, pullies, and hangers, and weigh 2,400 lbs.—These planers are 25 per cent. lower than any others built. Cuts can be had by addressing as above, post paid. 19tf

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
QUARTERMAN & SON,
22tf Painters and Chemists

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 26tf

BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known—doing in a first rate manner 2000 broom handles and 4000 chair spindles per day, and other work in proportion. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 21tf

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application
JOSEPH P. PIRSSON, Civil Engineer,
24tf Office 5 Wall street, New York.

RAILROAD CAR MANUFACTORY.—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of Railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty and good taste, as well as strength and durability, we are determined our work shall be unsurpassed. JOHN R. TRACY,
16tf. THOMAS J. FALES.

FOWLERS & WELLS, Phrenologists and Publishers, Clinton Hall, 131 Nassau st., New York—Office of the Water Cure and Phrenological Journals. Professional examinations day and evening. 3 6m

MANUFACTURERS' FINDINGS and Leather Binding.—The subscriber is prepared to offer a large assortment of manufacturers' Findings for Cotton and Woollen Factories, viz., bobbins, reeds, harness, shuttles, temples, rockers, harness twines varnish, roller cloth, card clothing, card stripper and clamps, calf and sheep roller, leather, lace, and picker string, potato & wheat starch, oils, &c. Leather Banding, of all widths, made in a superior manner from best oak tanned leather, rivetted and cemented.
28 3m P. A. LEONARD, 116 Pearl st.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1-4 to 7 inches in diameter. The only Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine, and other Steam Engine Boilers.
THOS. PROSSER & SON, Patentees,
16tf 28 Platt st., New York.

A VALUABLE INVENTION FOR SALE. It being out of the subscriber's line of business, a valuable invention will be sold cheap. For particulars address "A. N.," Sharp Town, Somerset Co., Md., post-paid. 29 2*

LEONARD'S MACHINERY DEPOT, 116 Pearl st., N. Y.—The subscriber has removed from 66 Beaver st. to the large store, 116 Pearl st., and is now prepared to offer a great variety of Machinists' Tools, viz., engines and hand lathes, iron planing and vertical drilling machines, cutting engines, slotting machines, universal chucks, &c. Carpenters' Tools—mortising and tennoning machines, wood planing machines, &c. Cotton Gins, hand and power, Carver Washburn & Co.'s Patent. Steam Engines and Boilers, from 5 to 100 horse power. Mill Gearing, wrought iron shafting and castings made to order. Particular attention paid to the packing, shipping, and insurance, when requested, of all machinery ordered through me. P. A. LEONARD.
28 3m

© 1851 SCIENTIFIC AMERICAN, INC.

Scientific Museum.

The English Railway.

The Editor of the Horticulturist,, Mr. A. J. Downing, now in England, is writing home a series of letters upon the different matters that meet his eye. Here is a few words upon the English railway system :—

The last word reminds me that I must say a word or two here, about the English railways. In point of speed I think their reputation out-runs the fact. I did not find their average, (with the exception of the road between Liverpool and London,) much above that of our best northern and eastern roads. They make for instance, hardly twenty miles an hour with the ordinary trains, and about thirty-six miles an hour with the express trains. But the perfect order and system with which they are managed; the obliging civility of all persons in the employment of the companies to travellers, and the quietness with which the business of the road is carried on, strikes an American very strongly. For example, suppose you are on a railroad at home. You are about to approach a small town, where you may leave and take up, perhaps, twenty passengers. As soon as the town is in sight, the engine or its whistle begins to scream out—the bell rings—the steam whizzes—and the train stops. Out hurry the way passengers, in rush the new comers. Again the bell rings, the steam whizzes, and with a noise something between a screech and a yell, but more infernal than either—a noise that deafens the old ladies, delights the boys, and frightens all the horses, off rushes the train—whizzing and yelling over a mile or two of country, before it takes breath for the like process at the next station.

In the English railway you seldom hear the scream of the steam whistle at all. It is not considered part of the business of the engineer to disturb the peace of the whole neighborhood, and inform them that he and the train are coming. The guard at the station notices the train when it first comes in sight. He immediately rings a hand bell, just loud enough to warn the passengers in the station to get ready. The train arrives—no yelling, screaming, or whizzing—possibly a gentle letting off of the steam—quite a necessary thing—not at all for effect. The passengers get out, and others get in, and are all carefully seated by the aforesaid guard or guards. When this is all done, the guard of the station gives a tinkle or two with the hand bell again, to signify to the conductor that all is ready, and off the train darts as if it knew screaming to be a thing not tolerated in good society. But the difference is national after all. Bull says in his railroad, as in every thing else, "steady—all right." Brother Jonathan, "clear the coast—go ahead!" Still, as our most philosophical writer has said, it is only boys and savages who scream—men learn to control themselves—we hope to see the time when our people shall find out the advantage of possessing power without making a noise about it.

If we may take a lesson from the English in the management of railways, they might learn vastly more from us in the accommodation of passengers. What are called "first class carriages" on the English rails, are thoroughly comfortable, in the English sense of the word. They have seats for six—each doubled cushioned, padded, and set off from the rest, like the easy chair of an alderman, in which you can entrench yourself and imagine that the world was made for you alone. But only a small part of the travel in England is in first class cars, for it is a luxury that must be paid for in hard gold—costing four or five times as much as the most comfortable travelling in the United States. And the second class cars—in which the great majority of the British people really travel—what are they? Neat boxes, in which you may sit down on a perfectly smooth board, and find out all the softness that lies in the grain of deal or good English oak—for they are guiltless of all cushions. Our neighbors of this side of the Atlantic have been so long accustomed to catering for the upper class in this country, that the fact that the railroad is the most democratic institution of the day, has not yet dawned upon them in all its breadth. An American rail-car, built to carry a large number in luxurious comfort, at a price that seems fablous in England, pays better profits by the immense travel it begets, than the ill devised first and second class carriages of the English railways.

For the Scientific American.

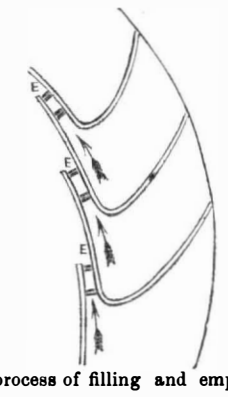
Hydraulics.

(Continued from page 232.)

Fig. 40.

Ventilated Wheels for Low Falls.—In England iron suspension wheels were built at an early period of the present century, as stated in an able paper on the subject by Mr. Fairbairn, of Manchester, Eng. In the early construction of such wheels, the arms and braces were fixed to the centre by screws and nuts upon their ends, as shown by fig. 40. The arms, C C, passed through the rim, B B, and the braces, E E, which traverse the angle of the rim, F F, are about the same as were employed in the earliest suspension iron wheels. This arrangement was convenient for tightening up the braces, but owing to the liability of the nuts becoming loose, it was difficult to keep the wheels true to the circle. The kind of keys (Gibs & Cotter's) used in steam engines, have been used as substitutes for the nuts, and with the best results.

Fig. 41.



If the process of filling and emptying the buckets, in fig. 41, be traced respectively in each, it will be found that, in the event of a large body of water being discharged into the buckets, they could not be filled if the openings at E E were closed and the air prevented from escaping in that direction; the air would be compressed and pent up in the bucket, and the water would be prevented from entering or blown out; this will not happen when the wheel is properly ventilated, and a free passage left open for the air, in the direction of E. The passages for the exit of the air are represented by the arrows, and the connection of the buckets with one another, is represented by rivets and tubular blocks. When a wheel of this kind is heavily loaded a small quantity of the water will sometimes escape along with the air above the lips of the outlets, E E, into the inside of the wheels, but this is not of much consequence, as the water comes back again, but this defect may easily be remedied by carrying the edge of the plate higher upon the sole of the upper bucket.

A quick and easy outlet for the water, when no longer required upon the wheel, is as important as an expeditious inlet; and it is evident that every drop of water which is carried by the wheel beyond the vertical line of the centre, is so much useless absorption of its power; moreover, in the construction of the bucket for the reception of the water, strict reference should also be had to its free and uninterrupted discharge. Another main point of consideration is the distance to which the water is carried, by its momentum or centrifugal action, when leaving the wheel; and it will be found advantageous to effect the discharge of water as soon as the bucket passes the lower edge of the stone-breast. This discharge being seldom accomplished in time in the old wheels, was a serious counterpoise to the power of the wheel, as the ascending buckets carried with them portions of the water to a considerable height, on the opposite side of the vertical centre. In the improved construction this defect is obviated; as the opening which allows the air to escape during the filling of the bucket re-admits it with facility during the discharge; there cannot, consequently, be any formation of a partial vacuum; and the wheel not only works easily, but to a much greater depth in the backwater. It has also been found necessary, in order to facilitate the escape of the water, to terminate the breast at a distance of about ten inches to the vertical centre, and always to have a depth from eighteen inches to two feet of water under the bottom of the wheel.

These are considerations of some value, as the abrupt termination of the breast admits of a much quicker discharge of water from the buckets; and the increased depth of the tail-race gives room for its escape, after it has passed from the wheel. In fact, the benefits arising from this form of breast and tail-race are so great, that they should be strictly enforced where it is desirable to have the full and effective use of the fall. In the erection of water wheels, these principles should never be lost sight of; and instead af a shallow tail-race, with the water running from the wheel at the rate of from six to eight feet per second, as is frequently the case with the old wheels, the current should be scarcely perceptible and the water should flow steadily and as smooth as in a deep canal.

Light at Last.

The following lucid explanation of the mystery of the knocking spirits, from a recent work by A. J. Davis, sets the whole matter before the public as clear as mud.

"I now proceed to explain how spirits can move a table or other inorganic substances: A spirit, without possessing any of the grossness of the earthly form, is yet organized in its principles and functions precisely as we are in this life; and when it, a spirit, desires to move a table, (by way of manifesting its nearness,) it concentrates its own magnetic and powerful elements so as to take hold, as it were, of the magnetism of the atmosphere. in like manner this atmospherical magnetism takes hold of the electricity of the air, and the latter is then concentrated upon the article which it is the spirit's design to move. Atmospherical magnetism and electricts are, therefore, the nerves and muscles which spirits employ in manifesting their presence to the material senses of believing as well as skeptical individuals. Hence, when "rappings" are heard, and when it is certain that no mischievous or designing person is producing them by way of imitation, then it is perfectly reasonable to conclude, as has been hitherto explained, that a friendly spirit from the spirit-land is producing electrical rolling concussions upon some material substances through the intermediate agencies of terresterial magnetism and electricity. The modus operandi of these phenomena I design not now to detail; because at present it is deemed snfficient for mankind to know that it is beth naturally and philosophically possible for spirits to approach and influence heavy and gross bodies of matter."

Chain of Being.

Bitumen and sulphur form the link between earth and metals—vitriols unite metals with salts—crystalizations connect salts with stones—the amianthus and lythopites form a kind of tie between stone and plants—the polypus unites plants to insects—the tube worm seems to lead to shells and reptiles—the water serpent and the eel form a passage from reptiles to fish—the anas nigra are a medium between fishes and birds; the bat and the flying-squirrel link birds to quadrupeds—and the monkey equally gives the hand to the quadruped and to man.

LITERARY NOTICES.

Gleason's Pictorial Drawing-Room Companion."—This elegant Pictorial has been sent to us by Mr. S. French, No. 151 Nassau st.; we have examined it, and we are frank to acknowledge it to be, in every respect, one of the most beautiful issues of the American newspaper press we have ever seen. The paper has a polished satin surface, the typography is good, and the woodcuts are finely executed. This effort of Mr. Gleason must meet with great success. The literary matter is of a high order, and we can, with propriety, recommend it to the family circle.

The Magazines for April are exceedingly beautiful,—Graham's has an elegant stipple engraving of "The Italian Girl," an exquisitely finished fashion plate of Wedding Dresses, and "The Home of Milton." Lowell, Tuckerman, Prentice, Boker, and several other eminent authors, appear as contributors. The number throughout is excellent.

Sartain's, for this month, has fifteen embellishments: "Our Little Brother," by Mr. Sartain, is a superb mezzotinto; "A victorious Armanent Returning to a Greek City," is one of the finest pictures we have ever seen. "The Resurrection of Christ" is a good line engraving, and the continuation of the scenes in his life afford profit to the reader, and enhances the merit of the magazine. We are gratified at the success which attends the labors of the publishers.

The Ladies' National has a fine mezzotint by J. D. Gross, of "Feeding the Chicken;" "Fashions," "Village Homes," and "Plans for Gardens," comprise the engravings. The contributions to this serial have always been of the finest order, although less in quantity than some of its cotemporaries. This is a good number.

Messrs. Dewitt & Davenport, Tribune Buildings, have these magazines for sale.

The International Magazine, for April, embraces a choice variety of the best literature of the day; it contains original papers by Dr. Mayo, G. P. R. James, Bayard Taylor, Alfred B. Street, and others of eminent literary attainments. The embellishments are of marked interest. This magazine has already attained a high place among its cotemporaries, and deserves all and more than it receives. Stringer & Townsend, 222 Broadway, publishers, at the remarkable low price of $4 per annum.

Harper's New Monthly Magazine, for April, has a finely executed portrait of Washington Irving, the accomplished writer, and a view of "Sunny Side," his residence on the Hudson. It has also a portrait of W. C. Bryant, his residence, etc., besides several views of the searching expedition for Sir John Franklin in the Polar Seas. The humorous scenes are spirited, and would do honor to the veritable "Punch." The success of this enterprise is unparalleled, it having reached the enormous circulation of 60,000 per month. The selection evinces judgment and discrimination. Terms $3 per annum.

The Photographic Art Journal.—No. 3 of this Journal, H. H. Snelling, editor, W. B. Smith publisher, contains an excellent article on the "Researches on Light;" "A Treatise on Photography," (an excellent one), and a number of other good articles. This is an able magazine.

MECHANICS

INVENTORS
AND
MANUFACTURERS.

The Best Mechanical Paper
IN THE WORLD!
SIXTH VOLUME OF THE
SCIENTIFIC AMERICAN.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the Sixth Volume of this valuable journal, commenced on the 21st of September last. The character of the Scientific American is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America.

It is published weekly, as heretofore, in *Quarto Form*, on fine paper, affording, at the end of the year, an *ILLUSTRATED ENCYCLOPEDIA*, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED *ORIGINAL ENGRAVINGS*, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

It also possesses an original feature not found in any other weekly journal in the country, viz., an *Official List of PATENT CLAIMS*, prepared expressly for its columns at the Patent Office,—thus constituting it the "*AMERICAN REPERTORY OF INVENTIONS.*"

Terms—$2 a-year; $1 for six months.

All Letters must be Post Paid and directed to
MUNN & CO.,
Publishers of the Scientific American,
128 Fulton street, New York.

INDUCEMENTS FOR CLUBBING.

Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish—

10 copies for 6 mos., $8 | 15 copies for 12 mos., $22
10 " 12 " $15 | 20 " 12 " $28

Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value.

PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.

© 1851 SCIENTIFIC AMERICAN, INC.